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ABSTRACT

The main purpose of this project is to evaluate the success of the Los Angeles Women's Job Corps Center in helping girls rise out of poverty by improving their attitudes and economic status. A second objective is to estimate the cost of each service provided to a girl. Based on comparisons of outcomes among girls as individuals rather than groups, an evaluation design was developed for estimating the relationship between post-program economic prospects, corpswoman attitudes, and each element of the set of services received from the Center. Although long-term outcomes cannot be observed for some time, the use of short-term outcomes is adequate when these are related to long-term outcomes. The evaluation design focuses on the potential impact of changes in the mix of services offered by the Center. (BH)

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Stephen J. Carroll, Patricia O. Katsky,
Linda Kleiger, Anthony H. Pascal and S. James Press

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PREFACE

In June 1969 the Office of Economic Opportunity awarded Rand a contract to evaluate the programs of the Los Angeles Women's Job Corps Center. The Center had just begun an experimental program and the focus of the evaluation was on comparing the effectiveness of the experimental program with that of the traditional program operated by the Center for the past five years.

It was anticipated that the study would extend over three years. The first year was to be devoted to developing the evaluation design and collecting data on corpswomen's characteristics and in-program experiences. In the final two years, longitudinal data on corpswomen's post-program experiences would be collected and analyzed. Analysis of the data will be the subject of a separate report, while this Report concentrates on the evaluation design.

The authors owe much to Mary Dolittle, Director of the Los Angeles Women's Job Corps Center, and her staff. Their active cooperation helped to smooth the many difficult steps in the analysis. Jacquie Richman, the Center's Research Director, developed most of the data sources and directed the entire data collection effort. The authors also owe special thanks to Rand colleagues Stephen Barro, David Greenberg, Joseph Large, Robert Levine, John McCall, and Malcolm Palmatier, as well as to Gilmore Wheeler of OEO and Mary Ann Hammerel of the Department of Labor, Job Corps, for commenting on earlier drafts.

SUMMARY

The purpose of the Los Angeles Women's Job Corps Center is to help girls rise out of poverty by improving their economic opportunities and by modifying their attitudes. One of the principal objectives of the evaluation program is to estimate the relative contributions of the different program components to this purpose. The evaluation is designed to estimate the association between the post-program economic prospects, the attitudes of each corpswoman, and each element of the set of services which she received from the Center. To satisfy the requirements of the Job Corps environment we have developed an evaluation design (as opposed to an experimental design) based upon the notion of comparisons of outcomes among individual girls rather than between groups of girls. To do this we completely disregard the notion of a program in which many different girls participate, and we consider each girl as an individual instead. We assume that her behavior after leaving the Center is a result of the interactions among three sets of factors: 1) Who and what she is, which, for convenience, we term her characteristics; 2) How she was treated while in the Job Corps, that is, what services she received and in what amounts; and 3) A set of unobserved factors randomly distributed among all corpswomen. Two principal hypotheses to be tested in the course of the study can be stated as follows:

> The long-term economic success achieved by a girl after participating in the Los Angeles Women's Job Corps programs is associated with her individual characteristics, her attitudes at entry into the Center, and the services the Job Corps provide for her.
>
> A girl's long-term attitudes after participation in the Los Angeles Women's Job Corps programs are also associated with her individual characteristics, attitudes at entry into the Center, and the services the Job Corps provided for her.

In addition to these two hypotheses the evaluation study will test many subsidiary hypotheses. The long-term outcomes which are the subjects of the primary hypotheses cannot be observed for some time after a girl terminates. Outcomes observable while a girl is still in the Center, or when she terminates, are often used as measures of program performance in intercenter comparisons. They are also used as "targets" or goals by Center staff. Such uses are justified only if there are relationships between proximate outcomes and Job Corps services and between proximate outcomes and long-term outcomes. To examine whether such relationships exists, the study will test the following hypotheses:

> A girl's proximate outcomes following participation in the Los Angeles Women's Job Corps programs are associated with her individual characteristics, her attitudes at entry into the Center, and the services the Job Corps provided for her.
>
> A girl's long-term outcomes following participation in the Los Angeles Women's Job Corps programs are associated with her proximate outcomes.

Because the Center's budget is limited, the kind and amount of services offered to each corpswoman are constrained by the availability of funds. The second principal objective of the evaluation study is to obtain estimates of the cost of providing each service to a corpswoman.

This evaluation design focuses upon the potential impact, in terms of contribution to the Center's objectives and costs, of changes in the mix of services offered to the corpswomen.

One particular implication of this approach is worthy of emphasis. This study cannot in any way be interpreted as an evaluation of the Los Angeles Women's Job Corps Center in comparison to other Job Corps Centers or other manpower programs.

CONTENTS

PREFACE. iii

SUMMARY. v

LIST OF TABLES ix

Section

I. INTRODUCTION AND OVERVIEW 1
  The Job Corps Center. 1
  The Evaluation Objective. 1
  The Evaluation Design 4
  Limits of the Evaluation. 6
  Uses for Evaluation Results 7
  Outline of the Analysis 8

II. SUMMARY OF THE EVALUATION DESIGN. 9
  Principal Hypotheses. 9
  Subsidiary Hypotheses 11
  Data. 11

III. DESCRIPTION OF THE PROGRAMS FOR RESIDENT AND COMMUTER CORPSWOMEN. 14

IV. METHODOLOGY 22
  Evaluation Technique. 22
  Program Effectiveness 30
  Test of Hypotheses. 33
  Interpretation of Results 34
  Program Costs 37

V. VARIABLES AND MEASURES. 40
  Program Outcomes. 40
  Program Services. 47
  Corpswomen's Individual Characteristics 50

VI. ATTITUDINAL VARIABLES AND MEASURES. 56
  Attitude Variables. 57
  Attitude Measures 60

Appendix

A. STATISTICAL TECHNIQUES. 67
B. DATA COLLECTION 84

BIBLIOGRAPHY 107

LIST OF TABLES

Text

1. Approximate Ethnic Composition of the Residential and Commuter Programs. 16
2. Vocational Enrollment, Commuter Program. 18
3. Vocational Enrollment, Resident Program. 19
4. A Hypothetical Example of the Relation Between Hours of Basic Education and Changes in SAT Reading Scores. . . . 31
5. Attitude Variables and Hypotheses. 66

Appendix

B-1. Partial Summary of Data Collection Effort, Center-Specific Instruments. 86
B-2. Partial Summary of Data Collection Effort: Published Instruments. 87

Item

B-1. Corps Data Sheet 88
B-2. Intake Interview, Form A 89
B-3. Intake Interview, Form B 91
B-4. Employment Interview 93
B-5. Basic Education Evaluation 95
B-6. Attendance Card. 96
B-7. Staff Evaluation of Corpswomen 97
B-8. Report of Vocational Training in Progress. 98
B-9. Record of Staff Contact and Individual Corpswoman Conference 99
B-10. Report of Group Meetings or Activities 100
B-11. Vocational Record. 101
B-12. Exit Interview 103

I. INTRODUCTION AND OVERVIEW

THE JOB CORPS CENTER

The Los Angeles Women's Job Corps Center (LAWJCC), located in downtown Los Angeles, provides basic education, counseling, vocational training, and related services to young women, 16 to 21 years old, from impoverished families. Since its inception in 1965 the Center has operated as a residential facility. Until 1969, all girls enrolled in the program, approximately 315 at any one time, resided in the Center itself.

In June 1969 the Center was funded to set up and operate an experimental program for girls commuting daily from the Los Angeles area. Over 100 girls at any one time participate in the commuter program. These girls share in the same basic education classes and training sequences, and are afforded the same supportive services (such as counseling and medical services), as are resident girls. Commuter girls are also included in informal, after-hours Center activity. The primary substantive difference in the treatment received by the two groups of girls, residents and commuters, is residency itself.

THE EVALUATION OBJECTIVE

The basic objective of the Job Corps is to "... prepare young people to be responsible productive citizens by providing them the opportunity to rise out of poverty by increasing their own knowledge and skills."[*] The Job Corps seeks to affect the behavior of corpswomen by modifying their attitudes toward themselves, toward the world in general, and toward work, as well as by providing them with knowledge and skills. The tools available to the Job Corps to accomplish these objectives are, in the main, services that are provided directly to corpswomen or are purchased from an outside source.

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[*] U.S. Congress, Subcommittee on Economic Progress, of the Joint Economic Committee, *Federal Programs for the Development of Human Resources*, 89th Congress, 2nd Session, December 1966, Vol. I, p. 116.

If the Center had an unlimited budget, and if girls had unlimited time and patience, the Center could allocate to every girl as much of every service as she could conceivably need. But limited funds and time constrain the Center's staff in their determination of the set of services that can be made available to each corpswoman. To meet this major responsibility the Center staff requires two types of information: First, they must be able to estimate the effectiveness of each service to meet the individual needs of a corpswoman. Corpswomen differ among themselves; a service well-suited to the needs of one may be of little value to another. It is important that resources not be dissipated in providing unneeded services. Second, Center staff must be able to estimate the cost of providing any given service to a corpswoman. Limited resources are clearly not well used if a relatively expensive service is provided to a girl when a less costly alternative would meet her needs equally well.

The purpose of this evaluation is to provide a part of that information. Since considerations of sample size as well as anticipated problems of data availability preclude examination of all the services offered by the Center, this study restricts the analysis to four services -- basic education, skill training, counseling, and residency. Preliminary analysis suggests that these account for the major share of the Center's discretionary funds. Consequently, decisions regarding these services are of primary importance.

The Job Corps' approach to helping corpswomen can be conceived as a two-stage process. When a girl enters the Job Corps Center she is provided with various services, the receipt of which will, ideally, lead her to modify her attitudes, as well as directly increase her knowledge and skills. When the girl leaves the Center, the second stage of the process begins. Her newly acquired knowledge and skills will, again ideally, open new opportunities to her. And her modified attitudes will dispose her to take advantage of these opportunities.

Viewing the Center's program from this perspective emphasizes a crucial point. Job Corps' objectives are really two distinct sets of objectives. In the first of these, termed "proximate" objectives, the

Center seeks to improve a corpswoman's reading and mathematical abilities, to teach her a skill, to modify her attitudes, and so on.

On the other hand, the proximate objectives are only a means toward an end. The long-range objective of the Job Corps is to help individuals rise out of poverty. Presumably, attainment of the proximate objectives will contribute to attainment of the long-run objective. But this is not necessarily true. Suppose, for example, that attendance in basic education at the Center improves a girl's ability to read. Suppose, further, that by virtue of her improved reading ability she is able to obtain a desirable job. Then the process has worked in the manner described above. But suppose, however, that her reading ability proves to be of no help when she seeks a job. In such a case the Center's basic education has been effective in terms of the proximate objective, but it has been ineffective in terms of the long-run objective.

Conversely, a service could be ineffective in attaining a proximate objective yet at the same time contribute much to the attainment of long-run objectives.

From this perspective it is easy to see that the evaluation effort really contains two phases. The first phase coincides with the proximate objectives. Data on a corpswoman's characteristics, the services she received while in the Corps, and the extent to which the proximate objectives were attained are all available at the time a girl terminates. Cost data is also available then. Thus, with respect to proximate objectives, it becomes possible to obtain estimates of the effectiveness and the costs of the services as soon as a sufficient number of girls terminate to provide a reasonable sample size. As time passes, and more girls terminate, these initial estimates must be revised.

The second part of the evaluation objective is to estimate the effectiveness and costs of services with respect to the long-term objective. Obviously, we cannot observe the extent to which girls are able to rise out of poverty until sometime after their termination from the Center. Six months after enough girls to provide a reasonable sample have terminated from the Center, this second phase is scheduled to begin. Data on the girls' positions must also be collected twelve, eighteen, and twenty-four months after termination. Subsequent revision of the analysis in the light of longer periods of observation and larger sample sizes will allow refinement of the results.

THE EVALUATION DESIGN

Evaluation can be defined for our purposes here as an analysis of behavior. The primary purpose of such an evaluation is to determine whether an individual's participation in some activity has induced a change in her behavior. In our case we wish to determine whether participation in various phases of the Job Corps program enables more corpswomen to rise out of poverty than would have been the case had they not participated. To do this, the evaluation must estimate what the behavior of the participants would have been had they not participated in the program. The difference between this estimate and the participants' actual behavior then becomes an assessment of the impact of program participation.

In the traditional approach to evaluation, the design rests on the assumption that the primary purpose of an experimental program is to provide information. The experimental program is designed to provide answers to questions about potential programmatic results rather than to provide the program results themselves. The primary purpose of the Job Corps Center is a different one: to help corpswomen. We cannot control the availability of the services in order to provide evaluation data. In particular, because ethical and legal constraints preclude denying program services to girls there is no way to create a control group.

In order to structure the evaluation study for the LAWJCC it was necessary to develop an *evaluation design* (as opposed to an experimental design). This design is similar to an experimental design in that it is a predetermined plan which specifies the hypotheses to be tested in the course of the evaluation, the data acquisition efforts required to support tests of hypotheses, and the analytical techniques which will be used to infer the answers from the data. It differs from the experimental design in that it has no control group generated by a process of random assignment. Without such a control group we cannot simply compare the outcomes of program participants with the outcomes of those who have not participated, because we could not know whether differences in outcomes stemmed from differences in the girls included in each group, participants and nonparticipants, or from the fact that one group participated in the program while the other did not.

Further, this is not a single, undifferentiated program. The Job Corps is a multidimensional program offering an array of services in varying amounts to corpswomen. It is possible that two girls with similar characteristics could enter the Center, receive substantially different services while there, and, because of this, behave quite differently after termination.

Our design is based upon comparisons of outcomes among individual girls rather than between groups of girls. In essence, we completely disregard the notion of a program in which many different girls participate. Instead, we consider each girl as an individual. We assume that her behavior after leaving the Center is a result of the interactions among three sets of factors: 1) Who she is and what she is, which, for convenience, we term her characteristics; 2) How she was treated while in the Job Corps, or what services she received in what amounts; and 3) A set of unobserved factors randomly distributed among all corpswomen.

A formal discussion of the existing analytical techniques that allow the simultaneous examination of the characteristics, services received, and outcomes of any number of girls is reserved for Appendix A. Given certain assumptions, these techniques can be used to estimate the separate contributions of a Corpswoman's characteristics and the services she received as they apply to each girl's outcomes.

LIMITS OF THE EVALUATION

We must immediately emphasize that, throughout this evaluation, we are concerned with relative, not absolute, effects and costs. We cannot compare participants to nonparticipants, since we have no observations on the behavior of girls who have not participated in the Job Corps. We can attempt to estimate the differential impact of a service upon different girls (that is, girls who have different characteristics). We can also attempt to estimate the differential impact of different services upon the same girls. With this information we can estimate which services, in what amounts, are relatively of the most help to different girls. But we cannot estimate the absolute impact of a given service upon a given girl.

As an example, the LAWJCC functions, in the words of the Center's Director, as a "therapeutic community," a phrase meant to be descriptive of the philosophy of the Center staff. Essentially it means that every staff member gives priority over all other responsibilities to helping girls with their problems. It would certainly be desirable to find out the extent to which this communal spirit is an effective tool in dealing with the problems of corpswomen. But, because no girl can be excluded from the "community," there is no way to estimate what corpswomen's behavior would have been in its absence. One particular implication of this limitation is worthy of emphasis. This study cannot in any way be interpreted as an evaluation of the Los Angeles Women's Job Corps Center in comparison to other Job Corps Centers or other manpower programs. The evaluation is limited to analyses of the differential impacts of the various services allocated to girls within the Center.

There is a second set of limitations, closely related to that described above. Some corpswomen may differ from the rest in more than one respect.* In these cases we can compare the outcomes of the corpswomen in question with the outcomes of the remaining corpswomen and determine whether they differ. But we have no way of determining the relative contribution of each of the respects in which they differ from other corpswomen. For example, suppose that all corpswomen from urban areas had some previous work experience. Suppose, further, that no corpswomen from a rural area had work experience. We can attempt to determine whether the urban or rural girls achieve greater employment success. But we cannot determine whether success results because one group of girls has had previous experience, or because the girls in the two groups have different backgrounds.

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*Whether they consistently differ with respect to their characteristics or services received or some combination of both does not matter.

The severity of these two sets of limitations is unknown at present. We must await detailed examination of data before we can ascertain the extent to which either constraint is binding.

USES FOR EVALUATION RESULTS

Having discussed what cannot be done in this evaluation effort, we now consider what can be accomplished. Our objective is to estimate the cost and effectiveness of the various mixes of services which the Job Corps can make available to girls having various characteristics. For example, consider the basic difference between the resident and commuter programs: residency. We view residency as a service provided to some girls, residents, but not to others, commuters.* Analysis of the impact of this difference will lead to one of three possible conclusions. Other things being equal: 1) Girls invariably do better (by some standard) in a residential environment; 2) Girls invariably do better in a commuter environment; or, 3) Some girls respond better in a residential environment, others in a commuter environment. Of course, in the third case, it is necessary to identify what types of girls do better in each program. Clearly, the Job Corps can be of more help to corpswomen if it knows which of the three alternatives is most accurate.

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*We do not imply that the girls in one program receive "unfair" treatment. The commuter program incurs costs (such as transportation and child-care allowances) which are roughly equivalent on a per-girl basis to the costs of providing a residence. We are merely pointing out that some girls receive services different from the services received by others.

Many similar examples could be cited. Should every girl receive four weeks of basic education? Or six weeks? Or eight weeks? Or should some girls be given more basic education and others less? If so, which girls should get more and which less? And so on. But it should be clear that proper allocation of limited Job Corps services to girls requires knowledge of the differential impact the services will have upon the corpswomen receiving them.

OUTLINE OF THE ANALYSIS

We have introduced the basic concepts employed in the evaluative research in this first section and described, on an intuitive level, the methodology we employed in constructing a design for the evaluation. Section II summarizes the consequences of the design. The hypotheses to be tested and the variables included in the hypotheses are listed there. We also indicate, by examples, the sorts of questions that we believe can be addressed within the context of the research. In Section III we present a short description of the Job Corps Center.

The methodology of the evaluation is discussed in detail in Section IV. A model of the Center is developed there. The model suggests that the variables to be examined may be roughly divided into four categories -- program outputs, program services, corpswomen characteristics, and corpswomen attitudes. The specific variables in each of the first three categories are discussed in Section V. Because of the controversies encountered in hypothesizing relationships among attitudinal variables, we discuss in a separate section, Section VI, both the attitudinal variables included in the analysis and our hypotheses concerning them. Finally, in Appendix A, we present formal derivations of our statistical models and procedures, and we summarize the data collection effort required to support the evaluation in Appendix B. Edited versions of data sources not available in the open literature are also presented in Appendix B.

II. SUMMARY OF THE EVALUATION DESIGN

PRINCIPAL HYPOTHESES

The principal objective of this evaluation is to estimate the relative contributions of the different LAWJCC program components to their goals. Specifically, we seek to estimate the association between the post-program economic prospects and attitudes of a corpswoman and each element of the set of services which she received from the Center.

A corpswoman's economic prospects depend upon *who* she is and *what* she is, as well as the services she has received from the Center. Her attitudes are also expected to influence a corpswoman's postprogram economic success. We control for each of these sets of factors in order to estimate the impact of program services on long-term outcomes.

We test these two principal hypotheses:

1. The long-term economic success achieved by a girl after participating in the Los Angeles Women's Job Corps programs is associated with these sets of factors: individual characteristics, attitudes at entry into the Center, and Job Corps services.

2. A girl's long-term attitudes after participating in the Los Angeles Women's Job Corps programs are associated with these sets of factors: individual characteristics, attitudes at entry into the Center, and Job Corps services.

These hypotheses postulate the measurement of four sets of variables. The variables included in each set are presented below:

Individual Characteristics

- Family background
    - Stability of environment
    - Influence of father
    - Influence of mother
    - Years lived at home
- Number of dependent children
- Presence of husband
- Socio-economic status
    - Parent's education
    - Family income
    - Parent's occupations

- Years out of school
- Region of country where raised
- Size of place raised (urban/rural)
- Race
- Age
- Grades of schooling completed
- Possession of high-school diploma
- Employment success prior to Job Corps (where applicable)
    - Yearly earnings (full-time equivalent)
    - Highest wage
    - Percent of time employed since leaving school
    - Occupational status
    - Subjective judgment of job quality
- SAT[*] entrance reading score
- SAT entrance mathematics score

Individual Attitudes

- Toward self
    - Self-confidence
    - Change in view of self
    - Change in ability to get along with others
- Toward the world
- Toward work
    - Motivation
    - Job goals (whether vague or well-defined)
    - Level of job aspiration

Job Corps Services

- Resident or commuter status
- Participation in basic education (hours)
- Participation in vocational education (days)
- Amount of prevocational training (days)
- Counseling contacts
- Response to counseling need

Long-term Economic Prospects[**]

- Yearly earnings
- Current weekly wage
- Percent of time employed
- Occupational status
- Noneconomic criteria
    - Job quality
    - Marital pattern
    - Illegitimacy
    - Delinquency

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[*] Stanford Achievement Test.

[**] We assume that a girl's long-term economic prospects are revealed by her employment experience in the two years following termination.

SUBSIDIARY HYPOTHESES

Besides the two hypotheses specified above we will test a large number of subsidiary hypotheses. The long-term outcomes that relate to the primary hypotheses cannot be observed for some time after a girl terminates. Outcomes observable while a girl is still in the Center, or when she terminates, are often used as measures of program performance in intercenter comparisons. They are also used as "targets" or goals by Center staff. Such uses are justified only if there are relationships between such proximate outcomes and Job Corps services and between proximate outcomes and long-term outcomes. To examine whether such relationships exist, we will test the following hypotheses:

> 1. A girl's proximate outcomes following participation in the Los Angeles Women's Job Corps programs are associated with her individual characteristics, attitudes at entry into the Center, and Job Corps services.
>
> 2. A girl's long-term outcomes following participation in the Los Angeles Women's Job Corps programs are associated with her proximate outcomes.

The last of the variables to be defined are proximate outcomes. They contain the following items:

SAT exit reading score
SAT exit mathematics score
Exit Job Corps reading level
Exit Job Corps mathematics level
Success in skill training
Number of days in Center
Certification in skill
Attitudes at exit from Center

DATA

The data required to obtain measures on the variables will be collected from a variety of sources.* Upon entrance into the Center, each girl will be interviewed by Center staff. During this interview most of the demographic data will be obtained. Each girl's score on the Stanford Achievement Tests (SAT), given soon after entry into Center, will be employed as a measure of achievement.

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*Edited versions of all data acquisition forms except those published and therefore generally available are presented in Appendix B.

Approximately one month after beginning her program each girl will be interviewed again. At that time data on her employment experience prior to Job Corps will be collected.

Two sets of attitude instruments specifically developed for use with disadvantaged youth will be administered to each corpswoman. These will be used to obtain measures of attitudes toward self, toward the world, and toward work. Attitudes will also be probed in an exit interview conducted just before a corpswoman leaves the Center.*

Center records contain all the information required to measure a corpswoman's experience in the Job Corps.

Data on post-participation employment success and attitudes will be obtained by a longitudinal sequence of surveys. Output measures to be collected in the follow-up stage will show whether the girl has worked and if so, the wages she has received, the percentage of time since leaving the Job Corps that she has been employed, the socioeconomic status of her job, whether or not it is related to her Job Corps experience, whether she has obtained any additional training or schooling, and her attitudes toward herself and work at this point.

Measuring the costs of Center services entails compiling the costs of teachers, counselors, equipment, supplies and other staff except for vocational education courses taught outside the Center. For the latter, the fees charged to the Center reflect the costs of tuition, supplies, tools, uniforms, and licenses.

Job Corps Form 78 contains monthly cost data. Some of the data on Center services that we want to use can be obtained directly from this form. Staff salaries and the costs of supplies and materials used in basic education and counseling are two examples. However, the form separates vocational education costs into categories that include several occupations. Since we are considering detailed occupational classes, we are using invoices to collect data for those courses given outside the Center.

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*Section VI presents a detailed discussion of the attitudinal instruments.

III. DESCRIPTION OF THE PROGRAMS FOR RESIDENT AND COMMUTER CORPSWOMEN

Since its inception the LAWJCC has been generally considered to be a "good" Center. It has demonstrated its ability to hold girls by maintaining a relatively low dropout rate (as compared with other Women's Job Corps Centers). It offers a wide variety of skill-training options to corpswomen.

Girls have been traditionally recruited into the ongoing resident program by the Women in Community Service (WICS), a nation-wide, volunteer organization. About 50 percent of the resident girls come from the Western states; most of the remainder are from the old South. At any one time 25-30 states are usually represented among the approximately 300 girls in the Center's resident program. In addition, the U.S. territories of Guam and Puerto Rico have typically been represented. Very few of the residents are from the immediate Los Angeles area.

During the summer of 1969 the WICS contract was terminated by the Department of Labor. Recruiting responsibility was turned over to the various state employment services. Coincidentally with the shift in recruiting responsibility, the demographic characteristics of the Center's population began to change. Girls from the urban areas of the Midwest and Northeast Coast began to appear in substantial numbers for the first time. Representation of the old South declined and girls from Hawaii and the island territories ceased to appear altogether.

The WICS contract was renewed early in 1970. It is not yet clear whether the demographic profile of the Center will, as a result, begin to move toward its traditional distribution.

The recruitment of the girls for the commuter program is performed separately from the ongoing recruitment procedures described above. Commuters are recruited by a staff employed directly by the LAWJCC for this purpose. The girls' homes are clustered in three areas of the city -- a predominantly black area not far from the Center, a predominantly Mexican-American area in East Los Angeles, and an area that is more racially and ethnically mixed, located at a greater distance from the Center in the vicinity of Los Angeles harbor. This geographic clustering of enrollees was necessary to ensure that adequate transportation could be easily arranged for participating girls.

In order to enter either the resident or commuter program girls must be "... 16 through 21 years of age, permanent residents of the United States, from impoverished homes, out of school, unable to find suitable employment, medically qualified, and free of any serious criminal record."* No formal screening on criteria other than these is permitted. Of course, individual recruiters may employ various additional criteria informally.

There are obvious differences between the two programs in terms of the distribution of the demographic characteristics of the girls enrolled in each. We believe that these differences are partially attributable to differences between the recruiting organizations serving each program. However, we believe that differences between the demographic compositions of the two programs are also partially based upon the fundamental distinction between the two programs -- residency.

As an example of the differences between the demographic profiles of the two programs' populations, Table 1 displays the approximate ethnic composition of each program.**

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*U.S. Congress, Joint Economic Committee, Subcommittee on Economic Progress, *Federal Programs for the Development of Human Resources*, 89th Congress, 2nd Session, December 1966, Vol. I, p. 116.

**The ethnic distribution of corpswomen in each program typically fluctuates slightly as some girls terminate while others enter the program. More recently the percentage of Blacks in the residential program has sharply increased. We suspect that this reflects the 1969 change in recruiting responsibility for the residential program. Now that the WICS have reassumed recruiting responsibility the ethnic profile of the residential program should begin to shift back toward the distribution shown in Table 1.

Table 1

APPROXIMATE ETHNIC COMPOSITION OF THE RESIDENTIAL AND COMMUTER PROGRAMS
(in percentages)

	Residential	Commuter
Black	60	50
Mexican-American	8	35
Anglo and others	32	15

Blacks are more heavily represented in the residential program than in the commuter program. The proportion of Mexican-Americans in the commuter program is four times their proportion in the residential program. Anglos and others are relatively half as numerous in the commuter program.

Besides the pronounced difference in ethnic composition, the Center's staff has observed that corpswomen in the commuter program tend to be older, more often are married, and more often have dependent children.

The Center's training program is essentially the same for both resident and commuter girls. Upon entry into either program a girl begins a two-week orientation sequence. During this period corpswomen are introduced to the Center's staff and facilities. They are told what the Center expects of them and what they may expect from the Center. The girls take a number of tests, drawn for the most part from the Stanford Achievement Test series, and they begin to interact with the Center's counselors.

After the orientation period the corpswomen are given eight weeks of basic education emphasizing reading and arithmetical skills.[*] Each girl begins her basic educational work at a level consistent with her previous achievement as measured by the Stanford tests. They are allowed to work at their own pace, aided by the basic education instructors. The educational materials were designed for the Job Corps and are used at all Job Corps Centers.

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[*] Recently the Center has extended the basic education sequence to twelve weeks. However, all the girls who will be included in the analysis had completed basic education prior to the change.

Interspersed with basic education classes are counseling sessions and classes in "life skills." The counselors acquaint the girls with the skill-training programs from which they may choose, and aid the girls in choosing, a skill-training program consistent with their abilities and aspirations. In the life skills classes the corpswomen receive instruction in a variety of areas ranging from the basic principles of personal hygiene to cooking and sewing.

Once the basic education period is completed, the corpswoman is free to move into one of a variety of vocational training programs. The stated philosophy of the Center is that the girl is free to choose any training and the Center will attempt to provide it, often by contracting with an outside training institution. However, the girl is assisted in making her decision by Center staff, who base their recommendations upon her abilities. Depending upon the availability of open "slots" in the chosen vocational program, the girl may spend some time waiting to begin her training. During this waiting period the Center typically provides some prevocational training.

Since July, 1969, commuter girls have participated in twenty-four different vocational training programs. Four of these programs were provided in-house; the remainder by contract with an outside institution. During the same period resident corpswomen received training in forty-three different occupations, thirty-seven by contract. Tables 2 and 3 present complete enrollment in each vocational training program between July 1969 and March 1970.

In some of the vocational training programs, there are several levels at which a girl can "graduate" (that is, successfully terminate). In these cases a girl is considered to be a dropout if she terminates prior to achieving minimum standards in her skill. Once she has achieved those standards, however, she has the option of graduating or continuing in the training sequence to a higher level of proficiency. The average length of stay for graduates is approximately thirteen months, including the ten weeks devoted to orientation and basic education.

Table 2

VOCATIONAL ENROLLMENT, COMMUTER PROGRAM

Occupation	1969						1970		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Business data processing								1	1
Clerk, general office[a]		11	10	19	27	37	36	36	39
Commercial artist				1	1	1	1	1	1
Cosmetologist						1	3	4	5
Dental Assistant								2	2
Electronic Assembly[a,b]	1	1	6	7	9	6	6	5	7
Electronics product technician[b]					1	1	1		
Fashion merchandising								1	1
Grocery checker	1								
High school diploma							1		
Licensed vocational nurse[c]		2	2	2	2	2	3	3	3
Manicurist									1
Medical assistant								8	8
Nursery school teacher								1	1
Nursing assistant[a]				3	2	2	2	1	5
Occupational therapy assistant[b]									1
Pantry girl[a]								1	1
Practical nursing								2	2
Pre-nursing						1	1		
Pre-licensed vocational nurse					1				
Radiological technician								1	1
Retail cashier		1							
Vocational work task[d]							9	4	3
Wig styling				1	1	1			
Total	2	15	18	33	44	52	63	71	83

SOURCE: Job Corps Form 142, *Center Operations Report*.

NOTE: Enrollment numbers include those attending vocational education classes, corpswomen on leave, AWOL, etc.

[a] In-Center program.

[b] The following occupations are equivalent:
Recreation leader and recreation aide
Radiological technician and x-ray technician
Occupational therapy aide and occupational therapy assistant
Physical therapy aide and physical therapy assistant
Laboratory technician and medical lab assistant.

Electronic-products technician, electronic-assembly and electronic-technician assistant are different skill levels of the same occupation.

[c] Most corpswomen attend the in-Center program; some attend an out-of-Center course.

[d] A temporary assignment to work within the center while waiting to begin a vocational education course.

Table 3

VOCATIONAL ENROLLMENT, RESIDENT PROGRAM

Occupation	1969						1970		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Accounting	1	1	1	1	1	1	1	1	1
Barbering	1	1	1	1	2	2	2	2	3
Business data processing	1	1		2	2				
Clerk, general office[a]	111	103	84	85	117	101	70	75	85
Commercial artist			1			1			
Cosmetologist	6	8	7	7	9	11	9	10	10
Dental assistant	1		1	2	2	3	2	3	4
Electronic assembly[a,b]	14	19	16	17	24	18	8	8	9
Electronics products technician[b]				1	1	1	1	1	1
Electronic technician assistant			2						
Fashion design	1								
Food service supervisor[a]								1	1
Grocery checker	1		2			3			
High school diploma							5	2	2
Home catering	2								
Home health rehabilitation aide			1	1	1	2		1	1
Hospital admitting clerk						1	1	1	1
Keypunch						3	2	5	5
Lab technician						1	1		
Library assistant	1	1	1	1	1	1	1	1	1
Licensed vocational nurse[c]	36	32	56	54	47	43	42	40	64
Medical assistant	2	2	2	3	2	2	2	3	2
Medical lab assistant	2	1	1	1	1				
Medical receptionist			1	1	1	2	1	1	1
Medical secretary					1	1			
Mental health worker								1	1
Nuclear medicine technician				1	1				
Nursery school teacher								1	1
Nursery school aid[e]	3								
Nursing assistant[a]	15	29	11	17	16	18	16	15	16
Occupational nursing									
Occupational therapist	1	1							
Occupational therapy aide									
Operating room technician	2	1							
Pantry girl[a]	10	9	9	12	15	13	11	12	15

Table 3 - continued

Occupation	1969						1970		
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
PBX				5		11			
Photo lab assistant	1	1							
Physical therapy aide	3	3		2	2	3	5		5
Physical therapy assistant			2					5	
Police science									
Practical nursing	1	1	1	1					
Radiological technician[b]			3	1					
Recreation aide[b]									
Recreation leader[b]	1								
Upholstery	1								
Veterinary assistant	2	1	1	1	1		1	1	
Vocational work task[d]						13	26	35	13
Wig styling	1	1	2	2	1	2	1	1	1
X-ray technician[b]	1					1	1		
Total	236	275	273	285	279	261	210	229	208

SOURCE: Job Corps Form 142, *Center Operations Report*.

NOTE: Enrollment numbers include those attending vocational education classes, corpswomen on leave, AWOL, etc.

[a] In-Center programs.

[b] The following occupations are equivalent:
Recreation leader and recreation aide
Radiological technician and x-ray technician
Occupational therapy aide and occupational therapy assistant
Physical therapy aide and physical therapy assistant
Lab technician and medical lab assistant.

Electronic products technician, electronic assembly and electronic technician assistant are different skill levels of the same occupation.

[c] Most corpswomen attend the in-Center program. Some, however, attend an out-of-Center course.

[d] A temporary assignment to work within the center while waiting to begin a vocational education course.

Girls are encouraged to continue their stay at the Center. In particular, efforts are made to assist those girls who wish to obtain the General Equivalency Degree (GED). This is the equivalent of a high-school diploma obtained by taking a state-administered examination.

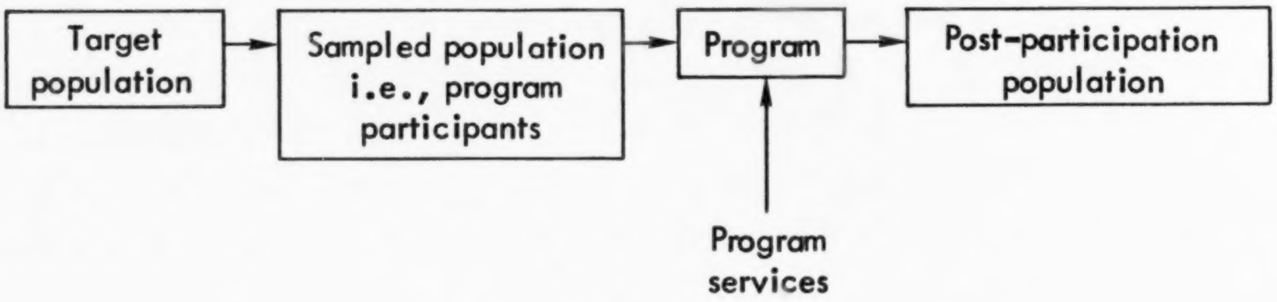
The Center works directly to provide job placement for terminating girls who wish to remain in the Los Angeles area; these are about 40 percent of the residential girls. Outside the Los Angeles area the state employment office nearest to her home is assigned the task of helping the corpswoman get a job. A sum of money, proportional to the length of time she has spent in the Job Corps, is given to the girl upon termination. Resident girls who have obtained employment in Los Angeles may be given these ifunds in Los Angeles.. A girl who has not found a job in Los Angeles must return home before receiving her "readjustment allowance." In the latter case the funds are disbursed through the state employment office nearest her home. This procedure is designed to ensure that she visits the employment office upon returning home.

The Center maintains medical and dental facilities. Soon after entering the Center, girls are given complete physical and dental examinations. Treatment is provided in the Center's facilities when possible. Arrangements are made with outside physicians and medical or dental specialists when necessary. Throughout a girl's stay at the Center she receives routine examinations and treatment. The Center also attempts to provide whatever legal services the corpswomen require.

IV. METHODOLOGY

EVALUATION TECHNIQUE

Our systematic evaluative analysis can be most easily discussed in the context of a conceptual model of the Job Corps program. Although simplified and intuitive in its presentation, we use the following discussion to describe the evaluation design process.* Consider the naive view of the process shown in the following flow chart.**


Target population
Sampled population i.e., program participants
Program
Post-participation population
Program services

This flow chart shows a *target population* consisting of young women from backgrounds judged to be debilitating to their chances of becoming responsible, productive citizens. The group of such women who enter the Job Corps program are assumed to be a representative *sample population* drawn from the target population. During their period of participation in the *program*, the corpswomen receive *program services*. Eventually, for various reasons, their participation in the program is terminated. They now form a *post-participation population*. Any observable effects resulting from having received the services will be reflected in differences between sample population characteristics and the characteristics of the post-participation population. Hence, a comparison of the characteristics of the two populations will yield an estimate of the impact which the treatment will have when applied to any member of the target population.

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*A rigorous formulation of the statistical models will be presented in Appendix A.

**The flow-chart technique used to portray models presented in this section was suggested by Bernard G. Greenberg and Berwyn F. Mattison, "The Whys and Wherefores of Program Evaluation," *Canadian Journal of Public Health*, Vol. 46, 1955.

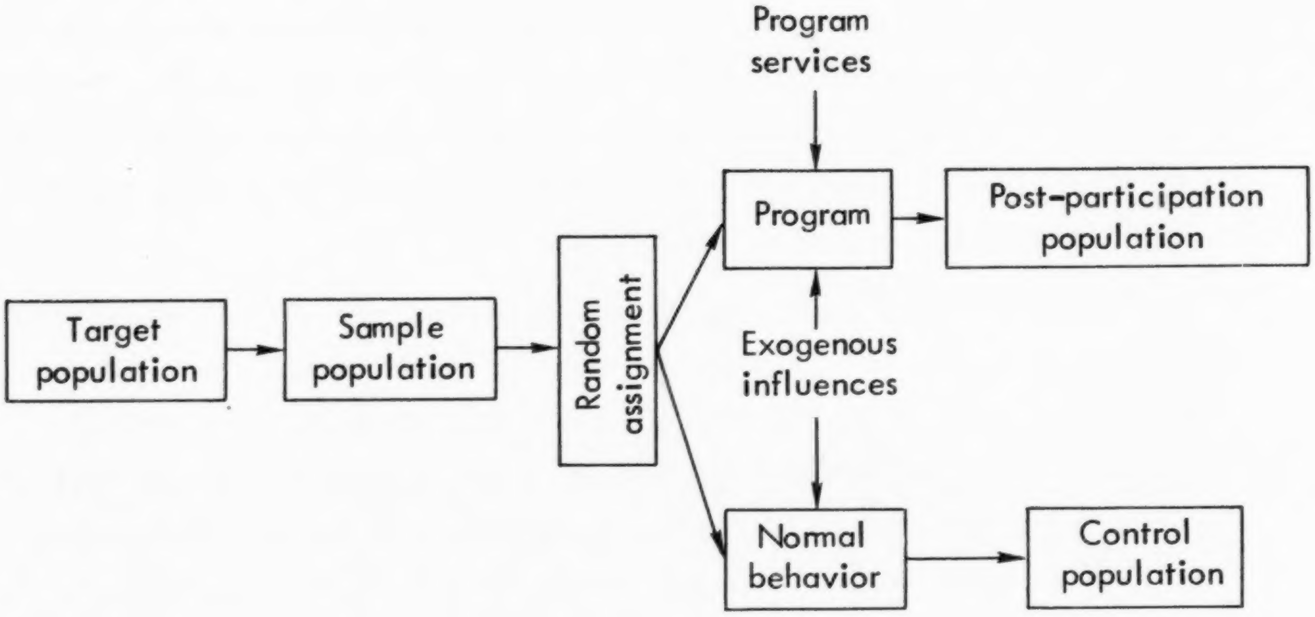
While useful in illustrating the program this model suffers from a serious deficiency. It does not take account of all the factors that impinge upon a girl while she is in the program. Not only do corpswomen reserve services during their participation in the program, they are also exposed to a number of factors not subject to manipulation by program administrators. Time is one obvious example.

Time passes while a girl is actively engaged in the program. She ages and, presumably, matures. Suppose that age, or maturity, is related in a causal way to any of the population characteristics which we intend to compare. In that case we would expect to observe a difference between the sample population and the post-participation population with respect to those characteristics affected by age, or maturity.

Of course, the program may also contribute to the maturation of corpswomen. To the extent that the program increases the rate at which a corpswoman matures, differences in population characteristics induced by maturation are properly viewed as programmatic effects. Conversely, to the extent that maturation is purely time-dependent (that is, completely independent of program participation), differences in population characteristics induced by maturation are not effects of program participation.

The problem of separating the effects of factors that are subject to manipulation (that is, program services) from the effects of factors that are independent of the program (that is, exogenous influences) is well known to evaluative research. The classical approach to the solution of this problem is illustrated in the flow chart below.

The *target population* and *sample population* as defined as in the first flow chart. In this more sophisticated approach the members of the sample population are divided into two subgroups by a *random*


Program
services
Program
Post-participation
population
Target
population
Sample
population
Random
assignment
Exogenous
influences
Normal
behavior
Control
population

assignment process. One subgroup enters the *program* and is subjected to both the *program services* and the *exogenous influences*. Eventually this group emerges from the program and forms the *post-participation population*. Without their knowledge, the second group is denied entrance into the program. The members of this group are assumed to engage in *normal behavior*, representative of the activities of the target population. *Exogenous influences* by definition, apply to this second group. (Exogenous influences are those factors, for example, time, which influence all members of the target population, whether or not they participate in the program.) An observed *control population* now exists whose characteristics differ from those of the post-participation population only insofar as the program services affect population characteristics.

The final step in this model compares the characteristics of the post-participation population with the characteristics of the control population. Any differences between them can be attributed to the influence of the program services.

The conceptual model developed above requires further generalization before it can be applied to the evaluation of the Job Corps Center. The model implicitly assumes that an identical set of program services is equally applied to all program participants. While the Center offers a number of services to corpswomen, all corpswomen do not receive equal amounts of all services. Some corpswomen, for example, will enter the licensed vocational nurse (LVN) program, while others will receive vocational training in clerical skills. The LVN option requires considerably larger expenditures of time, effort, and money (in the sense of opportunity costs) by both the Center and the corpswoman, than does the clerical program. Clearly, the corpswoman who enters the LVN program receives different services (at least different in terms of degree, if not in terms of kind) from those received by the corpswoman who enters the clerical program. These are only two of some 43 vocational training programs offered in the Center. The same principle holds for virtually all comparisons made among alternative training programs.

In general, a corpswoman who terminates her activity at the Center before completing her training program receives fewer services than the corpswoman who graduates. Even this relationship, however, is not universally valid. Consider, for example, two corpswomen who enter the program at the same time. Suppose one enters, and completes, a relatively short-term program (for example, clerical) while the second enters, but does not complete, a longer term program (say, LVN). It is entirely possible that the graduate will have received fewer services, over all, than will the dropout.

We cannot view the Job Corps Center as a homogeneous program in which (a) any given individual either participates or does not participate, and (b) all participants receive equal and identical services. Rather, we view the Center as a conglomeration of individual programs, offering different mixes and amounts of similar services. An incomplete conceptualization of the process is shown in the third flow chart below.

Here again, those (say n) individuals who enter the Center form a *sample population.** Once in the Center each corpswomen engages in

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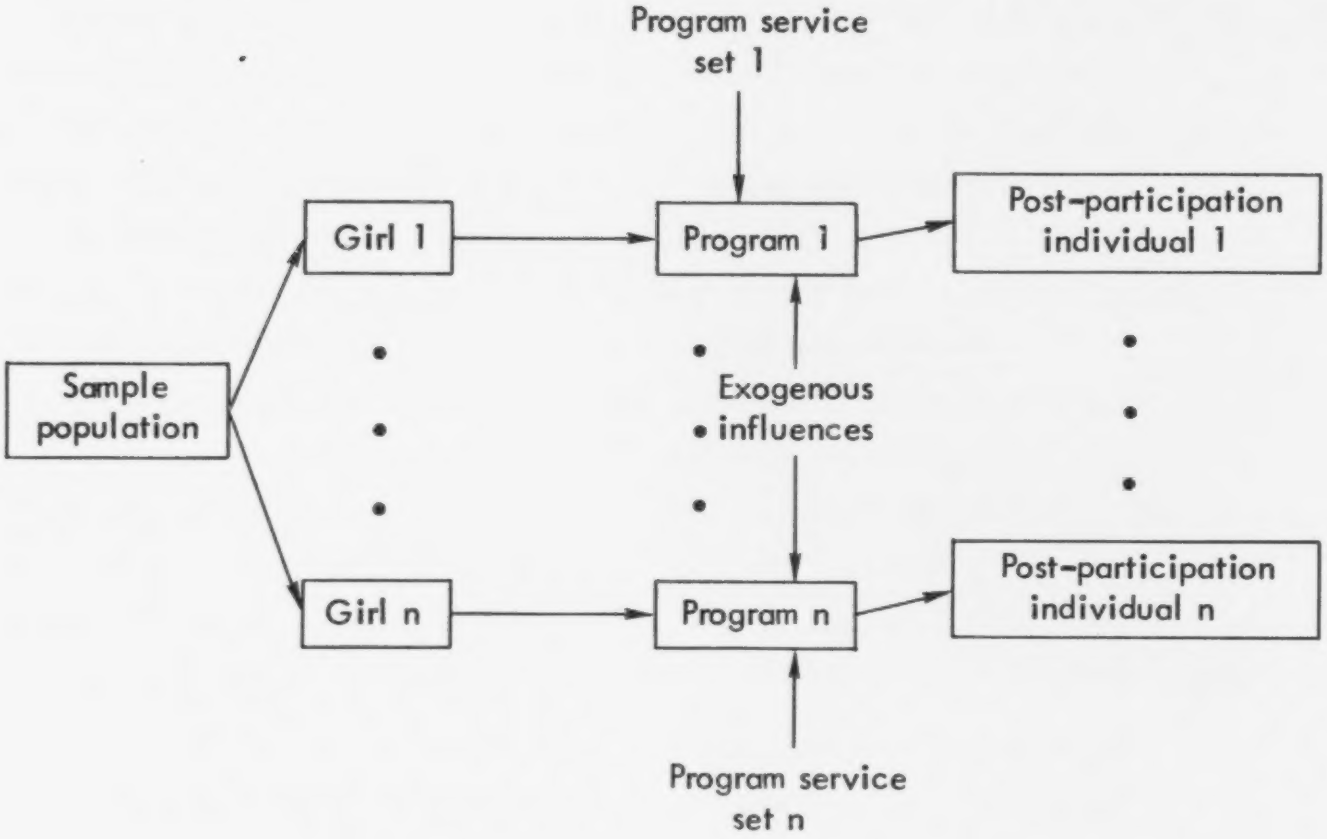
*We explicitly do not assume that the sample is representative of the target population.


Program service set 1
Sample population
Girl 1
Girl n
Program 1
Program n
Exogenous influences
Post-participation individual 1
Post-participation individual n
Program service set n

a different *program.*[*] Here each program is defined in terms of treatments rather than administrative categories. Since any two corpswomen can receive different sets of services (different in terms of either absolute amounts or mix), we view them as being in different programs. Later, when their relationship with the Center is terminated, the former corpswomen are *post-participation individuals.*

The characteristics of any two post-participation individuals may be compared. Since different post-participation individuals have been in different programs and have received different sets of program treatments, differences in post-participation individual characteristics are attributed to differences in program treatment sets. By an appropriate series of such comparisons the relative effects of individual services can be estimated.

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[*] We do not mean to imply that every girl necessarily receives a different set of services. It is, of course, possible that two or more corpswomen may receive identical sets of services. When this occurs we simply treat them as being in identical programs. We note only that not all programs are identical; whether all programs are different is immaterial.

The last flow chart described above differs from the classical evaluation model shown in the second flow chart in two respects. First, each member of a homogeneous sample population may receive a different set of services; that is, may be assigned to a different program. As yet, nothing has been said about the process by which girls are assigned to programs. In particular, we have not assumed that girls are assigned to programs by a random process. Second, the model contains no control group. The first of these differences is treated below. Discussion of the second is reserved for Appendix A.

Services, which define programs in this terminology, are not randomly allocated to corpswomen. A girl's needs and desires are fundamental determinants of the set of services she receives while in the Job Corps. We must recognize that because corpswomen are receiving different services there may be some differences in the girls themselves. Thus, we are faced with the problem of determining whether differences in post-participation individuals should be attributed to differences in the sets of services received or to differences in the initial characteristics of the corpswoman who enters each of the programs being compared.

For example, some girls in clerical training have achieved a twelfth-grade reading level. Yet some girls in the electronic assembly program can read at no better than a fifth-grade level. Suppose we were to observe that clerical graduates were receiving higher paying jobs than graduates who had had electronic assembly training. Does that indicate that the services received by girls in the clerical program contribute more to a girl's ability to obtain a high paying job? Or does it simply reflect the fact that girls who read better get higher paying jobs?

These questions can be answered if there are any training programs in which corpswomen with a twelfth-grade reading level and corpswomen with a fifth-grade reading level are enrolled. By comparing the outcomes of graduate corpswomen with different reading levels within a training program for a number of different programs, we can estimate the earnings return to reading-level achievement. The earnings return to twelfth-grade reading-level clerical graduates is then viewed as the sum of two components: the earnings return to reading-level achievement and the earnings return to skill training. Since the first of these components has been estimated, we can attribute the residual difference to the contribution of the skill-training program.

There are two objections to the technique as described above. First, individual corpswomen differ in many respects other than reading-level achievement. But we can deal with this objection by an extension of the model. Rather than viewing earnings return as being the sum of two components, we can extend the model to view earnings return as the sum of a number of components. One component is assigned to each characteristic of interest and to each Job Corps service. We can then estimate simultaneously the independent contribution of each component to the various corpswomen outcomes.

A second objection to the technique is that various characteristics and services may interact. For example, suppose that electronic assembly graduates with an eighth-grade reading-level do almost as well as electronic assembly graduates with a tenth-grade reading-level. Suppose, further, that eighth-grade reading-level graduates from the clerical program do not do nearly so well as clerical graduates who have achieved a tenth-grade reading-level. All other things being equal, this combination of outcomes suggests that reading ability is relatively more important to girls doing clerical work than to girls in electronic assembly jobs.*

This eventuality is accommodated in the model by introducing "interaction" components. These components contribute to outcomes only if some combination of services and/or treatments interact so as to cause the contribution of the combination to outcome to differ from the sum of the contributions of the individual elements of the combination.

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*Assuming, for purposes of the example, that girls obtain the type of job for which they were trained.

Three aspects of this model are worth emphasizing.* First, it is necessary to examine the undesired effects as well as the desired ones. In the manpower-training field there is reason to believe that the undesirable effects of program failure can be quite expensive. We cannot anticipate which negative side-effects will occur; we can only anticipate that there will be some negative side-effects. They may be derived from the notion -- almost a cliche in American society -- that it is unwise to raise expectations and then not fulfill them. Or they may be derived from a simple estimate of the likelihood of failure and an analysis of its probable consequences. Even if a program is successful in placing, say, 70 percent of its graduates in satisfactory jobs, the 30 percent who have undergone training and are not placed may represent the more socially significant group. It is not unlikely that within that 30 percent lies most of the potential for increases in crime, welfare dependency, and so on.

Second, we must remember the obvious but too conveniently forgotten point that the "real" objectives of manpower training are the long-term ones. The goal of manpower-training programs is not immediate job placement, nor even job retention, but improvement in lifetime earnings or job satisfaction, or both, from an individual point of view, and a reduction in poverty or unemployment from a national point of view. Essential to adequate evaluation of manpower programs is the examination of the relationship between proximate and ultimate criteria of success and probable long-term effects.

Brief mention should be made of the reference to unanticipated long-term consequences. We assume that there will be such consequences when the program is first planned and put in operation. When the program has been in operation for some time, however, some unanticipated consequences may begin to be recognized by those involved in the program, and still others may be recognized by those who do not have operational responsibility for the program but are in a position to study carefully its possible effects under changing conditions.

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*We are indebted to Kathleen Archibald who developed these points in an unpublished Rand paper, July 1968.

Finally, and most importantly, by emphasizing program variables, the model suggests that one of the gravest difficulties in current evaluations, in manpower training as in other social action fields, is the specification of program services. Most often a program is treated as an undifferentiated variable; a research subject either participated in it or he did not. Since different girls receive different services, each of which may vary across a wide range, it is necessary to obtain at least proximate measures of the quantity and, where possible, the quality of each service received by each participant.

PROGRAM EFFECTIVENESS

The purpose of the evaluation is to help program administrators as they seek to meet the needs of corpswomen within the limits imposed by their budget. One part of the information required by Center staff is what must be done to enable any particular girl to achieve a desired outcome. In terms of the program model presented above, corpswomen enter the Center with characteristics and, upon termination, achieve outcomes. The extent to which they achieve any particular outcome depends upon what services they received while in the Center, as well as their characteristics. From this point of view the Center's information requirements include estimates of the impact each service is apt to have upon a corpswoman, recognizing that those impacts may vary with her characteristics. The hypotheses we intend to test are designed to meet this need.

In summary, the hypotheses have this general form: "Other things being equal, girls whose characteristics include ____________ achieve more with respect to [outcome] __________ if they have received [the service] __________." Any of the characteristics, outcomes, and services from among those listed earlier can be inserted in the first, second, and third blanks, respectively. As examples of the general form, consider the hypotheses:

(1) Other things being equal, girls whose characteristics include high entrance SAT reading scores achieve more

with respect to earnings after termination if they have received counseling.

(2) Other things being equal, girls whose characteristics include father present while they grew up achieve more with respect to percent of time employed after termination if they have received counseling.

(3) Other things being equal, girls who have received more basic education hours achieve more with respect to exit SAT reading score if they have received basic education.

Of course, there are many characteristics, services, and outcomes. These generate many different hypotheses. We do not list every specific hypothesis.

We should emphasize the role of the conditional phrase, "other things being equal," in the hypotheses. Girls have many characteristics and receive many services. To test a hypothesis regarding the relationship between one service and an outcome for a girl with particular characteristics, we must "control" for the effects upon their outcomes of the other services the girl receives. In principle, we "net out" the effect of all services except for the one in question. This means that we must simultaneously examine the impact of numerous measures upon an outcome.

Consider the following example: Suppose five girls had entrance SAT reading scores, numbers of hours of basic education, and exit SAT reading scores as shown in Table 4.

Table 4

A HYPOTHETICAL EXAMPLE OF THE RELATION BETWEEN HOURS OF BASIC EDUCATION AND CHANGES IN SAT READING SCORES

Girl Number	Hours of Basic Education	SAT Reading Scores	
		Entrance	Exit
1	200	30	70
2	175	39	74
3	150	48	78
4	125	61	86
5	100	74	94

To keep the example simple, we assume that these five girls had identical characteristics in all respects, except for entrance SAT reading scores, and received identical services, except for the variation in hours of basic education. Since the girls are identical in all other respects, differences in their exit SAT scores must be the result of differences in their entrance scores or differences in the number of hours of basic education they have received. (We assume that statistical analysis has revealed that the variation in exit scores is greater than can reasonably be attributed to random chance.)

Casual observation suggests that exit SAT scores increase as number of hours of basic education decrease. Should this be interpreted to mean that the more hours of basic education a girl gets the worse she does on the exit SAT reading test? The answer is no. In fact, for the purposes of this example, each girl's exit score was calculated by multiplying her number of hours by one-fifth and adding the result to her entrance SAT reading score. While these numbers have no basis in reality, their message should be clear: If each additional five hours of basic education contributes one point to a girl's exit SAT score it follows that increasing a girls' hours of basic education leads to an increase in her SAT scores. Casual observation was misleading because, in this example, there are two distinct influences upon exit scores -- hours of basic education and entrance score -- and the former is overborne by the latter.

Of course, when more than two potential influences are considered, the process of estimating the independent contribution becomes much more complex. In practice, we meet this difficulty by using what is technically termed "multivariate analysis." The techniques of multivariate analysis, multiple regression, and variance-covariance analysis are well known and are adequately described in the statistical literature. These techniques allow the analyst to simultaneously isolate the impact of a number of influences. For our purposes, they allow us to test a number of hypotheses simultaneously.

The second set of hypotheses we wish to test concerns the relationships between proximate and ultimate objectives. Program administrators need feedback if they are to monitor their own activities. They can obtain little or no feedback in terms of long-term objectives. It is difficult, if not impossible, for them to determine the extent to which their activities are aiding girls in reaching longitudinal goals.

Under these circumstances they are forced to rely upon short-term measures (proximate outcomes) of their efforts. This reliance is appropriate only if the proximate outcomes are related in the expected manner to the long-term outcomes. For example, if Center staff were to notice a sharp drop in the rate at which corpswomen's SAT scores increase, they might begin to ask if some readjustment of the program would be needed. But this response is desirable only so long as higher corpswomen's SAT scores is a contributing factor to corpswomen's eventual success. It is thus necessary to confirm the relation between proximate and long-term (longitudinal) outcomes.

We estimate the relationships between proximate and longitudinal outcomes by testing a set of hypotheses of the general form: "Other things being equal, girls who achieve more with respect to the proximate objective _______ also achieve more with respect to the longitudinal (long-term) objective _______."

TESTS OF HYPOTHESES

The hypotheses discussed above can be tested in a variety of ways. In general, the choice among alternative statistical tests depends upon the available sample size and the extent to which we are willing to accept the assumptions of the underlying statistical models. The sample size available to test any particular hypothesis increases over time.

Any particular girl's data collection process continues throughout her stay at the Center and for two years thereafter. Data on each girl is collected at several points. Further, girls are constantly moving through the Center; in any single week at least a few corpswomen terminate and every two weeks a new group of girls enters the Center. When received together these two factors imply that the sample size with respect to any particular set of variables is constantly increasing.

The basic sample includes 183 girls who entered the commuter program between June 1969 and May 1970; it also includes 317 girls who entered the residential program over the same time period. If, in June 1970, we had wished to test hypotheses concerning differences between the entry characteristics of the two groups of girls, a sample of 500 corpswomen would have been available. Of these, in June 1970, 106 girls were enrolled in the commuter program and 170 girls were enrolled in the resident program. Hypotheses concerning corpswomen's proximate outcomes at termination could thus have been tested with a sample of 224 girls. If tests of hypotheses on proximate outcomes are deferred (or rerun) at some time in the future, some of the 276 girls who are now in the Center will have terminated, while new girls will have entered. Then the sample would be larger. Eventually, of course, all 500 corpswomen will have terminated.

We expect to test each of our hypotheses repeatedly. In the early stages of the empirical work when sample sizes are relatively small, we intend to rely on relatively unsophisticated statistical procedures such as tests of group means. We will also examine group distributions by the use of contingency table analyses. Our primary goal in the early stages of the empirical work is to develop an understanding of the properties of the data.

Subsequently, as more girls pass the various data collection points,[*] our sample should be sufficiently large to support more sophisticated statistical procedures such as analyses of variance and regression analysis.

INTERPRETATION OF RESULTS

Once the hypotheses have been tested, we will be in a position to answer a number of questions regarding the relative impact of Center services upon corpswomen's post-participation attitudes and economic prospects. For example:

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[*] For a complete list of these points see Appendix B.

1. Are girls' achievement levels (as measured by the SAT tests) higher at the end of basic education than they were at entrance?
2. Are the changes (if any) in girls' achievement levels systematically related to the amount of basic education they received?
3. Are changes similar in residents and commuters?
4. Are Center effects different for different subgroups (defined in terms of characteristics) of girls?
5. Are the changes in girls' achievement levels systematically related to her characteristics, or to the services she received, or some combination of both?

Questions such as the first listed above, while representative of the type of question that is often addressed in evaluation efforts, merely ask whether the values of a set of variables observed at one point in time are significantly different from the values of the same variables that were observed at a different point in time. Girls' achievement levels may well be higher at the end of their basic education sequence. But since we have no observations on similar girls who have not had basic education, we cannot determine whether changes in SAT scores stem from participation in basic education, or merely reflect the passage of time.

The second question can, and will, be addressed in our empirical work. There are a number of different statistical techniques that can be used to investigate the relation between the amount of time girls spend in basic education and changes in their achievement levels. In early stages of the work we will rely upon non-parametric tests of means.* The corpswomen will be divided into subgroups defined by the amount of basic education they have received. The statistical test will reveal whether the girls who received relatively more basic education systematically register higher achievement gains.

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*Formal discussion of the statistical procedures themselves is reserved for Appendix A.

The third question is, essentially, a refinement of the second. Again, we will rely upon nonparametric tests of groups means, this time comparing residents and commuters who have received roughly equal amounts of basic education.

As sample sizes increase, and as we become more familiar with the data, we will be able to use more sophisticated techniques. The fourth question above requires analysis of changes in achievement levels, controlling for the effects of girls' characteristics. We will use parametric tests for equality of means.

In the fifth question we turn to multivariate analyses to investigate the simultaneous impacts of services and characteristics. This level of analysis provides the most detailed results. Consequently, we will rely upon multivariate techniques to the largest possible extent.

The multivariate analyses will be based upon the model presented earlier.* The "dependent" variables will be the outcomes and the "independent" variables will be the program services and corpswomen's characteristics. At this level of analysis our first concern will be to identify that particular subset of services and characteristics that are significantly related to each of the outcomes. Once this has been accomplished the estimated impact of each service upon each outcome will be used to estimate the aggregate impact of alternative mixes of services upon girls having various characteristics.

Of course, achievement level is only one of the outcome measures. The process outlined above will be used for each of the outcomes we wish to study. It should be noted that as we move from one stage to another we use increasingly sophisticated statistical methods to obtain answers to increasingly specific questions. In general, we require more data and must accept more severe assumptions as more sophisticated methods are employed. We expect that data constraints and accumulated knowledge will indicate early termination of the process in at least some cases.

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*See page 26.

PROGRAM COSTS

To this point we have concentrated on measuring how each of the Center's services contributes to a corpswoman's post-training economic success. This is only one part of a two-part analysis necessary to support decisionmaking. In addition we must consider the cost of providing the various services.

To see how costs and the value of the Center's services interact in the decisionmaking process, let us consider an example of allocating funds for vocational education. The measure of program output we shall use here is change in the present value of lifetime earnings, recognizing that this is not the only important potential result of Job Corps experience. For simplicity, assume that all corpswomen are absolutely identical and that neither the costs of the course nor the change in earnings varies with the number of girls enrolled. Then, whatever set of services is most appropriate to the needs and abilities of any one girl will be most appropriate for all the girls. With these assumptions, each girl should receive the same set of services and, in particular, all girls should be enrolled in the same vocational education course. Suppose that completion of vocational training course X is expected to increase the measure of the corpswoman's lifetime earnings by, say, $5,000. If course X yields the next highest increase in the earnings measure upon completion, let us say $2,000, it appears that the corpswoman would be better off in course X than in course Y.

Now assume that the course furnishing the higher increase in earnings, course X, costs $500 per girl and course Y, which provides the lower increase in earnings, also has a lower cost, say $100 per girl. For each girl enrolled in course Y instead of X, the Center will be able to spend $400 more on other services. That extra $400 per girl could be used, for example, to provide a corpswoman with more basic education by hiring more teachers or increasing the length of time each girl spends in class or renting more floor space. Alternatively, the $400 per girl could be allocated to the purchase of more books for the Center's library. Or more counselors could be employed. The point should be clear. The Center provides girls with a large number of different services. If more funds are allocated to the provision of vocational education, then there are fewer funds remaining to furnish other services. The corpswoman will be better off taking course X rather than course Y if, and only if, there is no combination of increases in other services that yield at least a $3,000 increase in the present value of lifetime earnings for an expenditure of $400. Otherwise, she would be better off (in terms of her outcome) if the $400 were used to provide her with the combination of increases in other services.

Even this simple example should clarify the basic point. The particular mix of services that should be made available to any particular corpswoman depend upon the cost of providing those services as well as upon their expected impact on the corpswoman. The objective of our cost analysis is to estimate the costs of various program modifications that might be suggested by the effectiveness analysis.

Many of the costs incurred by the Center can be directly attributed to the purchase of a particular service on behalf of a particular girl. The Center typically arranges for a corpswoman to receive vocational training from some outside institution (such as, say, a trade school) and pays a fee to cover her tuition, supplies, and so on. In such a case there is no question but that the cost so incurred is attributable to that corpswoman.

There are also many expenditures not related to Center activities on behalf of any specific girl, such as the salaries paid to basic education teachers. A teacher's salary would certainly not be reduced or eliminated if the size of her class were reduced during basic education from corpswoman dropouts. Expenditures of this type are often referred to as fixed or joint costs.* Essentially they are costs which are

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*The term "joint costs" is used to describe expenditures incurred on the joint behalf of a number of girls. There is a subtle but quite "fixed" in the sense that they do not vary with what happens to any particular girl.

Clearly, the costs incurred on behalf of a particular girl must be taken into account when deciding what services in what amounts should be made available to her. It is equally obvious that the fixed costs associated with any services she may receive are not relevant to the question of whether she should be offered those services.

If all costs were either fixed or specific to an individual, application of these concepts would be straightforward. The problem is complicated, however, by the fact that costs which are fixed with respect to the services received by any one girl may not be fixed with respect to the services received by a group of girls. If the Center's population were reduced by, say, 100 girls, it may well be possible to reduce the size of the basic education staff, thus reducing costs. For that matter, if the Center were closed, all costs would eventually be eliminated. But on the other hand, if the Center's population were tripled, or quadrupled, it is doubtful that any cost would remain fixed; all costs would probably increase.

The point should be clear. The costs that should be considered in any particular decision are those that are affected by that decision. And different decisions affect different costs.

It should be noted that the total costs of the Center become relevant only in Center-wide decisions. For example, if we were comparing the LAWJCC with some other women's Job Corps Center, we would find the two Centers' total costs useful. However, as we have emphasized earlier, this evaluation is not designed to support inter-center comparisons. Consequently, the cost analysis will be concentrated upon specific costs for corpswomen of the Los Angeles Center.

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important distinction between fixed and joint costs. The difference between the two concepts is not relevant to our purposes and is neglected.

V. VARIABLES AND MEASURES

We have specified three categories of variables -- outcomes, program services, and individual characteristics -- to be examined during the evaluation. Many of these can be examined empirically once the data accumulated during the first year of the evaluation becomes available. The present analysis represents only the initial stage of the entire study, and is planned as a part of that longitudinal study. We view the overall plan as a flexible instrument revisible in accordance with accumulated knowledge as the study progresses. In fact, one of the primary purposes of the initial phase of the analysis is to obtain information for necessary modifications to the analytic plan.

PROGRAM OUTCOMES

The stated basic objective of the Job Corps is to provide young people the opportunity to "rise out of poverty." This objective is not concerned with what happens to a corpswoman during her stay at the Center, nor even with what happens to her immediately after leaving the Center, but with what happens to her over the long term. Hence, the primary outcome variable in the evaluation becomes the corpswoman's economic situation over her lifetime. The other outcome variables should also be examined in the course of the evaluation. They are the proximate outcomes, so termed because they are observable either while the girl is involved in the program or soon after she terminates.

Proximate-outcome variables measure a girl's achievements at various times as she progresses through the program. They are of evaluative interest for two reasons. First, to the extent that they have predictive power, they can be used by Center staff in advising a girl while she is still in the program. A girl's outcome at one stage of the program may be a good indicator of how she will fare in the next stage. Examination of such output data can increase the ability of staff to respond appropriately to the needs of corpswomen. To a certain extent, information about proximate outcomes is already being used. For example, a corpswoman's reading achievement at the end of the basic education sequence is considered a proximate outcome. Vocational counselors now use this outcome data in advising corpswomen when they choose a skill-training program. Since the various vocational programs have different requirements in terms of reading ability, such data can be useful in helping corpswomen choose among them. However, it is necessary to verify the predictive power of proximate outcomes used in this fashion.

Second, proximate outcomes are often taken as indicators of program efficacy. To the extent that such outcomes are closely related to long-term aims, their use as indicators of efficacy is warranted. For example, improvement in reading ability is often believed to be indicative of program achievement. If one center manages to obtain a greater average improvement in corpswomen reading levels than another, some observers believe that it is doing a better job. If the ability to read is a contributing factor in terms of a girl's long-term economic situation, then the use of measures of improvement in reading levels as indicators of program performance is justified. But, if reading ability is unrelated to a corpswoman's economic prospects, there is no reason to believe that improving it will help her to rise out of poverty. Under these conditions it is quite possible that the center contributing less to a corpswoman's reading ability is actually contributing more to help her rise out of poverty. Again, we are not suggesting that improvement in reading ability is either irrelevant or unimportant. We merely point out that the validity of such proximate outcomes as contributors to long-term objectives should be confirmed in the course of the analysis.

Long-Term Outcome Measures

The outcome variable of interest, a girl's economic situation over the long-term, cannot be observed in an evaluation study unless the study is continued throughout the corpswoman's lifetime. In the interest of deriving useful evaluative information for program administrators within a reasonable length of time, short-term indicators of the long-term outcome must be used. Consequently, we have arbitrarily chosen the corpswoman's economic situation two years after she leaves the Job Corps Center as the primary outcome variable in the evaluation. Although there is no evidence to justify this particular foreshortening of the time horizon, we feel it reasonable to assume that if a girl's economic prospects have not changed discernibly by two years after her termination, it is very unlikely that her participation in the program will affect her future economic situation.

It should also be noted that any individual's economic situation may vary from one time to another for unrelated reasons. For example, even a highly skilled person for whom there is great demand may suffer bouts of unemployment for causes such as ill health or a shift from one job to another. If at some particular time a corpswoman were found to be unemployed, it would be erroneous to conclude that her economic prospects were poor. Her economic position at a particular point in time may reflect temporary fluctuations and, thus, misrepresent her prospects over a longer time frame. To minimize the impact of transitory fluctuations in estimating economic prospects, we define a girl's economic situation two years after termination in terms of her average economic situation over the preceding twelve months.

We consider that an individual's economic situation is a multidimensional concept. We know of no single measure that adequately reflects a person's economic prospects. We believe it necessary to use a number of measures instead, each of which reflects one or more facets of economic prospects. While some measures of economic prospects are of particular interest now, in the course of examining the data, other measures will undoubtedly suggest themselves. We feel that a flexible approach that permits incorporating further measures of economic prospects into the analysis is valuable to the analysis. At present, the measures listed below merit first priority.

Yearly Earnings.* The ability of the individual to earn is clearly a direct measure of a corpswoman's ability to rise out of poverty by use of her own knowledge and skills. For girls who seek full-time employment upon termination this measure is clearly defined. For those girls who do not seek full-time employment after they leave the Center, we must construct a comparable measure.

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*This measure, and all other measures expressed in dollars, will be adjusted to reflect inflation and regional variation in the cost of living.

We must avoid the tempting notion of simply deleting from the analysis those corpswomen who do not seek full-time employment upon termination. They will include many who cannot work full-time for various reasons (for example, child care) and may also include some who simply drop out of the labor force. Excluding the entire group from our analysis would introduce a serious bias into the study.

We have no reason to assume that the extent of this bias would be equivalent in the residential and commuter programs. For example, suppose that 10 percent of both the commuter and resident terminees did not enter the labor force, but that 4 percent of the commuters as against 8 percent of the residents were prevented from obtaining full-time employment for such reasons as family responsibilities. Everything else being equal, the resident program is performing better than the commuter program in that 98 percent of its graduates, compared with 94 percent for the commuter program, are either making a positive contribution to their own economic prospects or fulfilling other responsibilities.

Current Weekly Salary. A salary is another direct measure of a girl's ability to earn. We will use the most recent salary as a measure for girls who are not employed, but have been employed at some time since termination. In cases where a former corpswoman is not in the labor force, we can construct a comparable measure. If a girl is compensated on some basis other than a weekly salary (hourly wages, monthly salary, commission, and so on), we will compute her average weekly earnings.

Percent of Time Employed. The ability of a girl to obtain and hold a job is measured by the percent of time after her termination from the Job Corps that she has been employed. Again, for girls who have not entered the labor force we will construct a comparable measure.

We note that, speaking crudely, a girl's annual earnings equal her weekly salary times the number of weeks she worked during the year. We can use this measure, along with the current weekly salary, to analyze separately two dimensions of earnings. These earnings need to be disaggregated, because it is possible that some services contribute to one dimension of the corpswomen's eventual economic success and not to another. Whether such a distinction exists can only be determined by separate analysis of the factors contributing to each component of earnings.

Occupational Status. Typically the status of a job varies directly with the compensation associated with that job. But there are many exceptions. The desirability of the job in the eyes of potential employees depends upon nonpecuniary as well as pecuniary returns. If the nonpecuniary returns to a particular job are large, and are recognized by a substantial segment of the labor force, the competition for the job will be greater than inspection of pecuniary returns would suggest.

A girl may be doing better in the job market than is indicated by her earnings if she manages to obtain a job offering large, generally recognized nonpecuniary returns. To the extent that this is true the status of her job will provide us with another measure of her economic standing. We will use standard socio-economic status scales to code occupational status.

Noneconomic Criteria. These measures will allow us to include the important group of girls who do not participate in the labor force after Job Corps, fulfilling instead other roles such as wife, mother, and so forth.

As an overall goal, the Jobs Corps attempts to facilitate stable life patterns among its graduates. Whereas for men, employment is likely to be a major indicator of a stable life pattern, for women, movement into traditional feminine roles can be as much an indicator of a stable, successful life as can good employment. In the past, indicators such as marriage, bearing of children (legitimate or illegitimate), delinquency, and so forth have been used to measure stability of life for women who have not been working. While there is still some utility in such indicators, changing life styles (such as the increasing number of informal "marital" arrangements), changing social acceptance of illegitimacy, and the increasing sophistication of social science in understanding the difference in evaluation of behavior for different class and ethnic groups suggest that these indicators, while helpful, do not provide sufficient information to determine if a life is "stable" or not. Further, it is difficult to obtain accurate data in many cases.

For these reasons we will not attempt to formulate and test sophisticated hypotheses concerning "stability." Rather we will attempt to identify relationships among corpswomen's characteristics, the services they received while in the Center, and aspects of their subsequent behavior. Given the lack of generally accepted theory in this area, our analysis will be exploratory. Our purpose is to discover whether measures can be defined so as to summarize the post-participation behavior of corpswomen who do not enter the full-time labor force.

Useful policy recommendations may be derived from the incorporation of such noneconomic criteria into the analysis. It is crucial, however, in these measures that the sensitivity of the results be tested. If the results are subject to substantial variation with small changes in the definitions of the measures, we cannot rely upon them. On the other hand, if the analytic results hold across a wide range of variation in definitions, we can place more confidence in them.

Attitudes. The corpswoman's attitudes toward herself, toward work, and toward the world in general are also outcome measures which we must analyze in the longitudinal study. Just as a girl's economic situation is a multidimensional concept, so is her attitude.

Proximate Outcome Measures

Proximate outcomes have been defined as those outcomes that can be observed while a girl is in the Center or at the time she terminates.

If they can be used to predict longitudinal outcomes then they can be used as short-term goals. Center staff can seek to improve a girl's performance with respect to these proximate outcomes, with the knowledge that by doing so they are helping her achieve the long-term objective. The Center can also be protected against being judged on invalid criteria only if the relationships among proximate outcomes (often the criteria used in judging a center's efficacy) and longitudinal outcomes are examined.

The proximate-outcome variables of interest are a girl's achievement while in the Center and her attitudes. The latter variable will not be discussed here, but will be treated below. The concept of achievement has many dimensions, and we have used the following several measures to reflect them.

Exit Reading Score -- Stanford Achievement Test (SAT). This test measures a girl's achievement in reading by comparing her score with nationwide norms. It is widely used in school systems throughout the United States.

Corpswomen are given the SAT three times during their stay at the Center. The "exit score" is defined as the score the corpswoman achieves on her last test prior to termination.

Exit Mathematics Score (SAT). This test is similar to that above. A measure of a girl's mathematical skill, it is used in the same manner as the SAT reading score.

Exit Job Corps Reading Level. This is an alternative to the SAT score as a measure of a corpswoman's reading achievement. It is determined by the Center's basic education staff when a girl completes the basic education sequence.

Exit Job Corps Mathematics Level. This supplies an alternative to the SAT test in mathematics.

Success in Skill Training Program. Derived from the vocational counselor's evaluation, this measure reflects the corpswoman's achievement in training for a particular skill or group of skills.

Number of Days in Program. This measure is used as a measure of a center's ability to hold corpswomen.

Certification in Skill Training. This measure reflects, in a crude manner, a girl's achievement in the skill-training component of the Job Corps program. If a girl is not certified in her skill at termination, this measure is defined as zero. If she is certified it is defined as one.

Attitudes. We view a girl's attitudes at the time she leaves the Center, as being a proximate outcome. Explicit discussion of attitudinal variables and measures is deferred to a latter section.

PROGRAM SERVICES

The second set of variables with which this analysis is concerned is program services. The analysis focuses on the mix of services offered to corpswomen and therefore the cost of each is of interest. The evaluation design includes the following set of program services as well as criteria for measuring the costs of each.

Program Service Measures

Residency. Because some of the corpswomen reside at the Center and others do not, there are a number of differences in the treatment accorded the two groups. We cannot isolate every aspect of the difference nor can we analyze separately the implications of each. We can, however, view the entire set of differences as a single aggregate service. This means that we view residency as a single service offered to some girls, but not to others. This is, of course, the same as observing that some, but not all, girls are offered LVN training; or that some, but not all, girls are offered beautician's training. Suppose we were to observe that LVN graduates "do better" (by whatever criterion we may happen to be using) than girls who graduated from beautician's training. The two skill-training programs differ in many respects and we cannot determine which of these differences led to the difference in outcomes. Nonetheless we can observe that the combination of services subsumed under the term "LVN-training sequence" contributes more to a corpswoman's outcome than does the combination of services subsumed under the title "beautician's training sequence." Similarly, we can estimate the aggregate impact of the set of differences in the services accorded to residents but not to nonresidents. In fact, the derivation of this estimate is one of the primary goals of the evaluation effort.

Hours of Basic Education. Although all girls are scheduled for eight weeks of basic education, very few have 100-percent attendance records. Whether absence is explained by sickness, a medical or dental appointment, Center business, or is simply unexcused, girls who are absent more hours spend less time in basic education classes. Consequently, the amount (measured in hours) of the service "basic education" accorded to corpswomen varies from one girl to another. We will examine whether this variation in quantity of service received by various girls explains variations in their outcomes.

Days of Skill Training. This measure crudely reflects the quantity of skill training received by the corpswomen. The use of this measure in analysis is similar to that of basic education discussed above.

Waiting Period. Often, after a girl completes her basic education sequence, she must wait a short period before beginning skill training. The length of this waiting period depends upon the availability of "slots" in the skill training program she has chosen. During this period a corpswoman may receive some preliminary training, but we suspect that for most girls this time does not make a positive contribution to their outcomes. To evaluate the effects of this time on the girl the length of the waiting period is introduced into the analysis as a service.

Counseling Contacts. While a girl is participating in the Job Corps program she receives much counseling from Center staff other than counselors. To obtain at least a crude notion of the quantity of counseling help received by a corpswomen, we will use two measures. The first is the number of significant interchanges between a corpswoman and any member of the Center's staff other than counselors. The second is the number of significant interchanges between a corpswoman and a counselor. In each case, the word "significant" means that a substantial segment of the conversation concerned some aspect of the corpswoman's life.

Response to Need. The quantity of counseling received by a corpswoman may not reflect its value to her. It may be much more important that she receive help at the particular time she needs it. We use the girl's evaluation of whether she felt that there was someone at the Center she could talk to at the time she needed help as a measure of this concept in the analysis.

Program Service Costs

Residency. The key to measuring the cost of residency is to describe the alternative residency services in which we are interested. We then measure the costs that change when residency services change. For example, suppose that the staff wishes to consider a program in which commuters live at the Center during the week, going home only on the weekends. Once this concept has been described, we can identify the resources (such as building space and food services) necessary to implement it. Some of the costs of the resources can be determined from accounting records, some from current invoices, and some will have to be extrapolated from past experience. We will not be using the Center's division of total operating costs between residents and commuters because, as we have explained in Chapter IV, the relevant costs for the purpose of evaluation are measured as the incremental cost attached to a specific decision.

Basic Education. We will examine the differences in teacher's salaries, supplies, equipment, building space and administrative services that come about when the length of the course is changed.

Skill Training. The fees charged by the contract schools plus administrative costs connected with the program plus transportation charges reflect the costs of the outside courses. Salaries, supplies, rent, and administrative costs will be compiled for various options differing from the present set of in-Center courses that are of interest to the staff.

Waiting Period. For most corpswomen, the costs of this service will be negligible in the sense that if the waiting period were reduced to zero, the cost of operating the Center would change very little. There are probably cases in which a girl takes a short-term skill training course if the wait for her chosen course is to be relatively long. Then the cost of the waiting period is the total cost of the fill-in training because, presumably, the relevant alternative here is no waiting period.

Counseling Contacts. These costs reflect counselor's time. Other staff members also render counseling services to corpswomen according to the concept of the therapeutic community. We do not include their salaries in counseling costs, however, because the amount they earn does not reflect these counseling duties.

CORPSWOMEN'S INDIVIDUAL CHARACTERISTICS

Approach to Choosing Variables

An analysis of behavior should incorporate various aspects of personality into its design. But aspects of personality such as motivation and aspiration have yet to be successfully introduced into general behavioral models. We feel that the most fruitful approach to these problems involves the assumption that aspects of personality that are extremely difficult to measure directly may be measured indirectly by objective criteria such as previous behavior and previous environmental situations. To the extent that this assumption is valid, we can use observations on environmental characteristics and previous behavior patterns as proxies for observation of individual personality characteristics.

This approach has often been used successfully in the social sciences. Studies have typically found characteristic patterns of development for individuals who have been exposed to similar conditions, that is, individuals who have grown up having certain types of family backgrounds, or who belong to given ethnic or racial groupings, to certain social class levels, and so on. This is not to say that background completely determines behavior; rather, to say that for quite complex reasons model patterns of life adjustment tend to occur within social groupings. To some extent, this is just another way of saying that bankers' sons are more likely to be bankers than bricklayers' sons, Horatio Alger myths to the contrary. Even when fathers' education and occupation are the only factors taken into account, sons' occupations can be predicted with a substantial probability of bein correct. The ability to predict behavior can be increased even further by taking additional background variables into account.

What a girl has done in the past offers clues to the way she will fare in the future. There is some evidence that employers are more receptive to job applicants who have acquired certain experiences (for example, a stable work history). Consequently, girls who have obtained these experiences would tend to fare better in the labor market than girls who lack these experiences. This suggests that girls who have had these experiences are, in some sense, substantively different (in the eyes of employers) from girls who have not. To reflect these differences in the analysis, we explicitly introduce measures of girls' experiences or behavior.

A hypothetical example may help to clarify this point. Suppose that we are concerned with only one characteristic, years of education. Suppose, further, that for some reason girls in the resident program have less formal education than girls in the commuter program. Since there is considerable evidence that earnings are directly related to education, commuters may very likely earn more than residents after termination. This relation may be true even if the resident program benefited the girls more than the commuter program.

In examining the relationships between outcomes and services, we must correct for differences in the characteristics of the populations receiving those services.

When choosing variables from a girl's background and experience we are limited by constraints including both conceptual difficulties (which variables are theoretically related to later job behavior and how) and methodological difficulties (some variables, such as presence of both parents in the home, are more easily observed than others, such as the actual tone of the relationship among family members). In light of these difficulties, we can include only a limited number of the variables most often and most reliably documented to be related to behavior.

Selected Variables

Schooling Stability. To measure the amount of stability in a girl's life we use the number of schools she has attended per year of schooling. The larger this measure is, the more often a girl has been faced with a major change in her environment. We expect this measure to be inversely related to her eventual performance.

Father Influence. The presence of a girl's father while she is growing up can be an important factor in the determination of how she views the world and what she believes will be her place in the world. Precisely why and by what process this occurs is not understood. Further, it is not clear whether the presence of other male adults will substitute for the absence of her father. Lacking any generally accepted measure of the role adult male figures play in developing a girl's attitudes, we resort to the relatively crude measure of whether her father was present when she grew up.

Mother Influence. This measure is the same as the previous one except that we examine whether the presence of her mother while she is growing up has a perceptible impact upon a girl's behavior while in, or after termination from, the Job Corps.

Years Lived at Home. If the presence of a girl's parents have an effect upon her eventual behavior, we would expect the magnitude of the impact to depend upon how long she was exposed to their presence. We suspect that how a girl behaves depends upon how mature she is, and that her level of maturity depends upon how long she has been "on her own." This is approximated by the difference between her age at entry and her age at the time she left home. We expect both measures to be positively related to outcomes.

Number of Dependent Children. The number of children dependent upon a girl is one measure of the amount of economic pressure upon her. We expect that she will be more motivated toward work as more children depend upon her earnings.

Husband Influence. The presence of a husband generally reduces the amount of economic pressure a girl faces. We expect girls who live with their husbands to be less motivated toward work.

Socio-economic Status. A girl's socio-economic status (SES) is expected to be related to her performance while in the Center and to her behavior after termination. Specifically, we expect girls with a higher SES to show greater improvement during their stay at the Center and to attain greater economic success in later life. Data and sample size limitations preclude construction of an SES index. Instead, for each girl we use three measures of her parents' status: her family's income, her parents' education, and her parents' occupations. Each of these is assumed to be positively correlated with her family's SES.

Years Out of School. This measure also reflects the length of time that a girl has been on her own. We suspect that it will become a positive predictor of employment behavior.

Region. The region of the country in which a girl is raised is a measure of her attitudes with respect to work. We expect that girls who were raised in one region will be more motivated toward work than girls raised in another. If true, this should be reflected in the girl's economic outcome.

Size of Place Raised. We use the size of the place where a girl was raised as a measure of her ability to function in an urban area. Specifically, we expect the economic performance of girls raised in urban areas to be better than that of girls raised in towns or rural areas.

Age. There is considerable evidence that as a girl grows older she suffers less unemployment and earns higher wages. This is understandable in that employers view age as a crude measure of maturity and experience. We hypothesize that the older a girl is, the better her performance will be.

Grades of Schooling Completed. This is an obvious achievement measure. We expect that it will be positively related to performance.

Possession of High School Diploma. This is a second measure of achievement. Again, we expect a positive relation between the measure and performance.

Employment Success Prior to Job Corps. This is a complex measure reflecting many dimensions of the individual. First of all, it is an approximate measure of a girl's motivation toward work. Second, it reflects a girl's knowledge of the world of work. Third, it is a measure of how much actual experience in the labor force she has had. We do not know which of these factors is dominant. We do expect, however, that each of these dimensions will be contributory to a girl's eventual economic performance.

We have measured the various dimensions of employment success by a set of measures identical to those used to reflect long-term employment success. These included yearly earnings, weekly salary, percent of time employed, occupational status, and noneconomic criteria -- all measures defined earlier. Further, we use the value of these measures prior to a girl's entry into Job Corps as individual characteristics.

Entrance Reading Score (SAT). As a measure of the girl's reading achievement when she entered the Job Corps, this test is expected to be positively related to her employment success.

Entrance Mathematics Score (SAT). This measure is also expected to be related positively to employment success.

Attitudes. We obtain direct measures on a number of a girl's attitudes soon after each girl enters the Center.

There is one more variable included in the set of individual characteristics -- *race*. We choose to discuss this variable separately for two reasons. First, racial questions are at the heart of some particularly sensitive issues in current public debate. We wish to avoid the misunderstanding that can arise when such a potentially sensitive measure is discussed in general terms along with a number of other measures.

Second, there is considerable agreement that the color of a girl's skin is a major factor in determining how she will fare in the labor market. However, there is equally as much disagreement as to why this should be true. We wish to explicitly recognize at the outset that the analyses included in this evaluation study cannot resolve this disagreement. We can determine whether, given the treatment afforded each group by the Center, girls of one skin color fare as well, on the average, as girls of another. Regardless of the extent to which skin color determines outcomes, we cannot determine whether such differences in outcome stem from current labor market discrimination against one racial group, or from disabilities which result from past, or even historical, discrimination such as, for example, in education.

VI. ATTITUDINAL VARIABLES AND MEASURES

In previous sections we have indicated that attitudinal variables are included in a girl's characteristics, her proximate outcomes, and her long-term outcomes. The assessment of the work-relevant attitudes of the sampled trainees will contribute to the evaluation of Job Corps programs in two respects: it will add to our ability to describe incoming trainees, and it will provide additional measures of the impact of the Job Corps on corpswomen.

Although work-relevant attitudes are highly correlated with measures of previous behavior such as work history, determination of attitudes at entry provides additional information on incoming trainees. To the extent that a girl's attitudes affect her behavior, the use of attitude measures as "controls" is required. For example, the girls might be divided into two groups: those who possess at entry positive work-related attitudes (that is, attitudes found in previous studies to be related to successful job behavior), and those with negative attitudes. Progress through the center and behavior afterwards is expected to be significantly different for the two groups. The groups with negative attitudes may receive greater amounts of some Center services and yet have a higher dropout rate and less job success after the program. If we did not control for attitudes such an event would lead to systematic underestimation of the impact of those Center services.

Furthermore, to the extent that various services have different effects upon girls, depending upon their attitudes at entry, knowledge of the attitude sets of incoming corpswomen could be used to channel each girl into that set of services that is most appropriate to her individual needs.

The Job Corps attempts to make participants employable not only by providing marketable skill training but by socializing the participants to a changed perception of themselves and the place of work in their lives. It is expected, for instance, that girls entering with poor attitudes but showing marked attitude improvement in the center will be the group with the most significantly improved job behavior after leaving Job Corps. This kind of information will be important given the inevitable sparseness of detailed information on long-term behavior change.

We plan to examine the effect of Job Corps experience on attitude change. The evaluation will be based on attitude data collected at entry (at the time the girl begins the program), at exit (when she terminates), and post-program (after she has been out for some months). Analysis of the data will ascertain (1) whether attitudes change, (2) in what direction they change, (3) whether the change persists after leaving the program, and (4) whether attitude changes are correlated with later job behavior. If we are able to identify attitude change at exit which is closely related to post-program employment "success," we will have validated measures of proximate outcomes that can be used in later evaluation studies. This will reduce future evaluation costs by reducing the need for long-range follow-up data.

ATTITUDE VARIABLES

Individuals possess an inner world of values, ideas, preconceptions, and attitudes. Generalized attitudes pervade a variety of situations and roles, whereas specific, specialized attitudes vary with different situations and roles. A person may hold the general attitude that work is an important and fulfilling part of life and at the same time hold more specialized attitudes about different jobs or different aspects of working (for example, one may prefer autonomy over security when searching for a job).

Out of all the generalized and specific attitudes an individual may possess, some are more likely to be related to his work behavior than others, though research to date has not provided as clear an identification of work-relevant attitudes as might be hoped. An evaluation must, however, build on available research findings in choosing attitudes for examination. We acknowledge the dangers of such a course. Although some social scientists have gone so far as to conclude that attempts to measure inner states, traits, or attitudes are essentially unproductive in generating understanding of behavior,* we believe that it is possible to measure relevant attitudes, and that previous research has identified a set of work-relevant attitudes sufficiently to be of use in the evaluation.

In general, the pertinent research has been conducted among two groups: youth and the poor. Several studies suggest that, as a result of the multiple deprivations of poverty, there are present in many poor people a characteristic set of attitudes.** These studies suggest that the poor are more likely to have low self-esteem and to perceive the world as a capricious and unmanageable place, where no amount of good performance can ensure a good outcome.

It has been hypothesized that these two sets of attitudes -- low self-esteem and belief that the world is unmanageable -- reinforce each other in a circular fashion. Individuals possessing these views are likely to do poorly on jobs because, among other things, they tend to lack the self-confidence to trust their own powers to master a hostile environment and are too quick to diagnose their behavior as having failed.

Such attitudes are likely to function as a "self-fulfilling prophecy," leading individuals to define their continuing life experiences as failures when in fact a chance for success may be present. This process increases feelings of self-depreciation and low self-esteem; and continued failure reinforces the view of the world as unmanageable.

Although most studies suggest that these attitudes reinforce each other, it may be possible that in some individuals they operate to affect behavior in another fashion. It has been theorized that given an experience of failure, individuals are likely to interpret this situation in one of two ways: to internalize the blame in themselves, or to project the blame onto a hostile and unmanageable world. It can

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*Walter Mischel, *Personality and Assessment*, Wiley & Sons, New York, 1968.

**Morton Beiser, "Poverty, Social Disintegration, and Personality," *Journal of Social Issues*, Vol. 21, January 1965.

be argued that individuals in the second group are likely to perform better since they may retain faith in their own abilities.

We mention these converse hypotheses (converse in the sense that opposite outcomes are hypothesized to stem from possession of a particular set of attitudes) to clarify our position on the use of attitudinal information in evaluation. We are concerned with the questions of whether -- and, if so, to what extent -- attitudes are associated with eventual employment behavior. Within the bounds of the evaluation we explicitly cannot concern ourselves with the questions of why -- or, by what process -- such associations exist. We have mentioned only two opposing hypotheses. We do not expect that our analysis will contribute to the eventual resolution of the debate. However, both hypotheses argue that there exists some association between particular sets of attitudes and behavior. We cite the hypotheses because they have served as a priori indicators of which particular attitudes should be included in the evaluation.

It is clear that attitudes affect behavior, and that there is some agreement on which attitudes are of interest. But the constuction of predictive theories concerning them is an area of considerable controversy. We enter this controversy only indirectly, through our selection of particular measures.

Studies have also documented attitudes found in the emerging "youth culture." Many young people seem to place a high premium on a life style in which a considerable amount of time is devoted to leisure and role experimentation. The existence of such a youth culture has been well documented among middle-class youths who participate in sheltering institutions such as universities and colleges.* Young people with these values are not likely to engage in behavior directed toward the development of a job career because such behavior is likely to conflict

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*See the articles in *Alienated Youth*, the special issue of *The Journal of Social Issues*, Abraham J. Tannenbaum, ed., Vol. 25, Spring 1969; and the articles in *Protest in the Sixties*, the special issue of *The Annals of the American Academy of Political and Social Science*, Joseph Boskin and Robert A. Rosenstone, eds., March 1969.

with the behavior pattern endorsed by their peers.* Although the existence of a similar culture among ghetto youth is also evident, the ways in which their behavior is structured are less understood.

On the other hand, corpswomen whose attitudes are less typical of the poverty and youth subcultures would be more likely to plan ahead in an organized fashion toward a specific job or career objective, to be self-confident, and to believe that the world in general was not capricious or unmanageable. The Job Corps probably needs to do little more for such women than provide them with a technical skill. The more difficult and significant task is with girls who enter the program with the supposedly "counter-functional" attitudes that are typical of one or both of these cultures.

Descriptions from previous studies of the subcultures of the poor and of youth have helped us select and construct the questionnaire for this evaluation. However, our limited sample does not permit us to test for the existence of subcultures on a large scale. Our study will allow us only to state whether attitudes found in the literature to be associated with such subcultures exist among girls in the Job Corps; and we will investigate the ways in which these attitudes are related to behavior.

ATTITUDE MEASURES

Based on a comprehensive review of the reliability and validity of various attitude measurement techniques, we have concluded that attitude measures should be judged on their ability to increase prediction of policy-relevant outcomes, such as future job behavior. Previous research indicates that: (1) Direct personal forecasting (that is, the individual's own estimate of his likely future behavior) contributes

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*Wellman describes a work-training program which was not sensitive to the "shucking and jiving" behavior of participating youths. The youths' orientation turned the entire training procedure into a location for youth culture activities such as game playing and status clarification. Youths who tried to interpret the training as a serious situation were ridiculed and ostracised by the majority group. See David Wellman, "The Wrong Way to Find Jobs for Negroes," *Trans-action*, Vol. 5, April 1968.

significantly to an observer's power to predict later behavior; (2) Indicators such as standardized psychological self-report inventories predict behavior less well, and (3) Ratings based on interpretations of others (such as Center staff's ratings of corpswomen) are the least useful in a predictive sense. In this study, we will use the first two types of measures; they will be judged on their "incremental validity," that is, their ability to provide a significant increase in prediction of behavior over other sources of information.

In the course of the evaluation we will examine three sets of attitudinal variables among corpswomen: attitudes toward self, attitudes toward the world, and attitudes toward work. For each, we will discuss our hypotheses concerning them, and how we plan to measure them. Since our object is evaluation rather than pioneer work in the field of personality theory, we will use previously developed and tested attitude measures wherever possible.

In general, we will treat the set of attitudes collected at entrance as characteristic variables; the set at exit as proximate outcome variables; and any attitudes collected later as long-term outcome variables. It should be noted that with some exceptions, we include the same attitude variables in all three categories.

The Self-Concept

By "self-concept" we refer to the notion that people perceive themselves as coherent, consistent entities possessing certain attributes that exist over time. In understanding behavior it is important to investigate the self-concept, since behavior is hypothesized to be structured to validate it.

Since this area is of great theoretical importance, there has been extensive research into the self-concept and its relationship to behavior. Nevertheless, inherent difficulties in conceptualization and measurement have been nearly insurmountable. In light of these difficulties, we have restricted our inclusion of self-concept variables in this evaluation to simple straightforward measures found to be related to work behavior. We have not included any of the more complicated and theoretically sophisticated systems of personality description abounding in the psychological literature.[*]

The first measure is a scale of work-relevant attitudes toward self developed by Regis Walther.[**] This scale was designed for use among youth and was constructed from a larger set of attitudes toward self found to occur with high frequency among poor individuals. It consists of eleven items, each of which is to be rated on a five-point scale ranging from (1) "Strongly Disagree" to (5) "Strongly Agree." For example: "I expect to do well in the things I try to do."[***] The Walther scale measures general feelings of self-confidence. This scale is administered at entrance and at exit from the program, and a modified version will be given in the longitudinal study. It is hypothesized that girls scoring high on self-confidence at entry will do better after the program than those scoring low and that girls whose scores increase in the program will experience significant improvements in job "success."

Two other measures of self-concept will be used to determine if the girls perceive themselves as having changed as a result of Job Corps. These measures are perceived changes in view of self and perceived changes in ability to get along with others. The hypothesis is that participants who as a result of their Job Corps' experiences develop a more positive view of themselves, and who perceive themselves as more able to get along with others, will experience significantly more job success than comparable girls who do not.

World View

By "world view" we refer to the notion that individuals possess a generalized approach to life which transcends and to some degree affects their response to specific situations and roles. Much research has attempted to locate and define general attitude sets that influence a variety of behaviors in a more or less consistent fashion. Recent work suggests that for those coming from disadvantaged backgrounds, a feeling of having some control over one's environment is related to a variety of successful coping behaviors.* This relationship between attitudes and behavior does not imply causality, which most likely runs in both directions. The existence of the relationship suggests, however, that it is worth trying to measure this attitude, which is likely to occur with successful coping behavior at a given point in time and is hypothesized to predict such behavior in the future.

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[*] For a review of some of this literature see Ruth Wiley, *The Self-Concept*, University of Nebraska Press, Lincoln, 1961.

[**] Regis Walther, *The Measurement of Work Relevant Attitudes*, Social Research Group, The George Washington University, February 1968.

[***] Walther, p. 33.

The measure of world view to be used in this study is a scale developed, again, by Walther for a Neighborhood Youth Corps population. His scale, termed "optimism," measures the degree to which the world is seen as hostile and unmanageable. It was developed and tested in the same fashion as the scale of self-confidence described above and has been found to be related to job success over a wide range of occupations. This scale also includes eleven items, with the respondent rating each item on the five-point scale. For example: "Most policemen are as crooked as the people they arrest."** We hypothesize that, other things equal, girls scoring high at entry will do better after the program than those scoring low; and that, among girls whose scores are similar at entry, those whose scores increase in the program will experience significantly more job success after the program.

Attitudes Toward Work

The attitudes discussed so far, self-concept and world view, are general attitudes which are hypothesized to affect behavior in a variety of situations and roles, including work performance. Our final attitude variable is specific and more limited. We will attempt to measure attitudes which are directly concerned with work. Although this

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*See especially James Coleman, et al., *Equality of Educational Opportunity*, U.S. Government Printing Office, Washington, D.C., 1966.

**Walther, p. 22.

set of attitudes would appear to be the most directly relevant for the evaluation, it is also the most difficult to measure in an abstract setting, since they are likely to be so situation specific. By this we mean that a girl is more likely to possess these attitudes with reference to a particular job or set of jobs she may have held or that she wishes to obtain; she may not have *any* coherent attitudes toward "jobs in general."

Several dimensions of attitudes toward work have been selected for the analysis. First, we are attempting to measure general motivation for work. Our measures of the general motivation for work will be obtained from responses to a series of questionnaires developed by Norman Freeberg and specifically constructed for use among youths with low verbal ability.[*] The Freeberg questionnaires consist of a battery of thirteen booklets. Each booklet contains pictorial information in the form of a number of scenes portraying a youthful adolescent figure in a situation relevant to the particular measure.[**] The interviewee is asked to respond to three items which identify his response to the depicted scene. Although these questionnaires are currently still in the developmental state we believe them to be the most useful instrument available for the purposes of this evaluation.

The study population will receive these questionnaires at entry and at exit. It is hypothesized that girls scoring high on job motivation at entry will exhibit successful job behavior after Job Corps and that girls whose scores increase in the program will experience significant improvement in job success after the program.

Our second measure of work attitudes is based upon the girl's estimation of what she will be doing in the near future. The girl's responses to these questions will be scored in terms of whether she has a specific goal and whether this goal includes employment. Those girls whose long-range goals are to fulfill the roles of wife and mother need to be considered separately from the girls for whom future employment outside the home is a definite goal. Among those girls whose goals include paid work, some have specific aspirations and some do not. Girls with specific long-range employment goals are hypothesized to be more likely to achieve job success than girls with vague, unrealistic, or no employment ambitions at all. The girls most likely to fail at constructing satisfactory, stable lives for themselves after Job Corps are hypothesized to be those with no future plan whatsoever.

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[*] Norman Freeberg, *Assessment of Disadvantaged Adolescents: A Different Approach to Research and Evaluation Measures*, Research Bulletin 69-41, Educational Testing Service, Princeton, May 1969.

[**] Each booklet is designed to measure a different attitudinal dimension.

A third dimension of job attitudes is the socio-economic status (SES) of the job the girl aspires to in the near future (for example, in three years). Given a level of realism or specificity of job intentions, it is hypothesized that the SES rating of a girl's self-prediction will be positively related to the job level actually obtained.

To conclude and summarize the above discussion we present Table 5. This table contains the major attitude clusters to be studied, the specific measures in each one, the hypotheses related to each variable, and the times at which the variable will be measured.

Table 5

ATTITUDE VARIABLES AND HYPOTHESES

Attitude Cluster	Measures	Hypotheses	Time Administered		
			In-house		Post-Program
			Entry	Exit	
Attitudes toward self	1. Self-confidence (Walther)	Girls entering with high self-confidence will do better after the program than those entering with low self-confidence. Girls who improve in self-confidence will do better after the program than girls who scored equally high at entry but who did not improve.	x	x	x
	2. Change in view of self	Girls whose view of self improves will do better after the program than girls whose view of self did not improve.		x	x
	3. Change in ability to get along with others	Girls who see themselves as able to get along better with others will do better after the program than those who do not.		x	x
Attitudes toward the world	Optimism (Walther)	Girls who see world as manageable and rational will do better after the program than those who do not.	x	x	x
Attitudes toward work	1. Work motivation (Freeberg)	Girls who enter the program with high motivation will do better afterwards as compared to those who enter with low motivation. Girls who increase in motivation in the program will do better after than the girls who did not increase.	x	x	x
	2. Work goal specified	Girls with specific job goals will do better than those with non-specific or no job goals.		x	x
	3. Level of job aspiration	Given a realistic aspiration, the socio-economic level of job obtained will be directly related to the level of the job aspiration.		x	x

APPENDICES

Appendix A

STATISTICAL TECHNIQUES

In this Appendix we summarize the statistical techniques to be used for evaluating the programs of the Los Angeles Women's Job Corps Center (LAWJCC). No new methodology is involved, so that traditional statistical procedures will be applied in all cases.

To answer the diverse kinds of questions we would like to ask about the LAWJCC, a single statistical technique will not suffice. For statistical purposes there are several different categories of questions, and for each question category there is generally some appropriate statistical technique which is preferable. These techniques will be discussed below.

There are also various degrees of certainty about conclusions obtained from statistical techniques, and the degree of certainty depends in part upon how much can be assumed about the underlying process generating the observed data; the more that can be assumed, the stronger will be the conclusions of the analysis. For this reason, various levels of assumptions will be made in analyzing some of the data. That is, some of the data will first be analyzed under a minimum of possible assumptions; then, the same data will be subjected to different types of analyses in which more binding assumptions are successively made. The reason for such a cautious approach to the analysis is that not all of the data have the same degree of statistical structure and desirable properties. For example, the data may not really be measuring what is desired (this is often the case with attitudinal data); or the data may not be appropriately scaled, in that a score of 4 as a response to a question on attitude changes may not really represent twice as much attitude change as a score of 2; or the data frequency distribution may be very skewed so that inferential techniques generally applied to normally distributed data will not be applicable. In such cases, by grouping or ranking the data and making no distributional assumptions about the individual observations, it is often still possible to draw meaningful conclusions. However, since very little is assumed, small differences are *not likely* to be detected by such techniques. The data to be obtained will be studied to see which collection of assumptions are most appropriate in each case. Then, statistical tests involving several underlying assumptions will be applied, and it is these tests which will hopefully discover small changes in program performance.

In general, various groups (populations) of girls are to be compared. The performance of girls in the commuter program is to be compared with the performance of girls in the resident program; the performance of girls of different racial and ethnic backgrounds will be compared; and attitudes of the girls before and after undergoing the Job Corps training program are to be compared. The following subsection describes the statistical techniques for making these comparisons, with various degrees of credibility.

Not all of the studies of interest involve comparisons of groups. Some concentrate upon developing relationships among the variables of interest, such as change in a girl's SAT score upon leaving the Job Corps compared with her score on entering the program, as a function of demographic and sociological characteristics; also, a girl's earning ability after leaving the Job Corps (compared with her earning ability before she entered the Job Corps) as a function of the characteristics of various training programs within the Corps itself. Methods for establishing these relationships are discussed in a subsequent subsection.

GROUP COMPARISONS

This subsection describes the statistical techniques which will be used to compare the means of the various populations of interest. Results will be of two types. The first type will give us the result of a test of whether the means of two populations are the same. That is, after sampling variation has been taken into account, is the result (change in SAT score, for example) the same on the average, for both groups of girls? The second type of result we plan to obtain is the extent of the deviation in means of the two groups, whenever a test indicates that there is a significant difference. A typical result in this category would be that with 95-percent confidence, average change in SAT score on the verbal part of the examination for girls in the commuter program (exit score minus entrance score) minus the average change in verbal SAT score for girls in the resident program is a number which lies between five and ten points (this example and the numbers used are strictly illustrative). The "confidence" level of 95 percent implies that in a statistical sense there is a 5-percent margin of error in the assertion about the difference in average change in SAT score between the two groups. That is, if many measurements on two such groups were taken, 5 percent of the time the difference in the average changes in score would be less than five points or greater than ten points.

Three types of tests will be described. The first type is *nonparametric*; that is, no distributional assumptions about the observations are made. Instead, the observations are ranked.

The second type of test to be described is *parametric* (the observations are assumed to be normally distributed), and the means of two groups are compared for the case in which observations are permitted to be correlated with one another (such as would be the case if comparisons were made of the performances of girls who had undergone the same Job Corps training programs).

The third type of test to be described is applicable to a comparison of means of two groups for several different output variables simultaneously. That is, it is a *multivariate test of means*. For example, suppose the two groups were girls in the commuter program and girls in the resident program, and suppose the output variables were change in SAT score, change in yearly earnings, and number of days worked since leaving Job Corps. Then, the multivariate test of equality of means compares the girls in the two groups on the basis of the three output variables simultaneously, taking into account the fact that the values of the three output variables must be correlated, since they are determined for the same girl, and such a triple of values is determined for each girl separately. If these correlations were ignored, much less powerful results (weaker conclusions) would be obtained.

Non-Parametric Test of Equality of Means

The test described below, due to Wilcoxon, was designed to test for the equality of means of two populations.*

Let $x_1, \ldots, x_m$ denote the m independently observed values of an output variable from the first group, and let $y_1, \ldots, y_n$ denote n independently observed values of the same output variable for the second group (assume $m \leq n$). If the means of the two groups were the same, the x and y observations could be pooled. In such a pooled collection, the $m + n$ observations could be ordered (taking algebraic sign into account). Let $x_{(1)}, \ldots, x_{(m)}, y_{(1)}, \ldots, y_{(n)}$, denote the ranks of the $m + n$ pooled observations. Define W_m as the sum of the ranks of the x_j's; that is,

$$W_m = \sum_{j=1}^{m} x_{(j)} \quad .$$

For example, suppose (hypothetically) that the observed changes in verbal SAT score for three girls in the commuter program and four girls in the resident program were as shown below:

x_j	Commuter Program	$x_1 = 3$	$x_2 = -2$	$x_3 = 5$	--
y_k	Resident Program	$y_1 = -3$	$y_2 = 8$	$y_3 = 4$	$y_4 = 6$

Here, $m = 3$ and $n = 4$. Pooling the observations and assigning ranks so that y_1 has rank 1 and y_2 has rank 7 gives the following:

$x_{(j)}$	Commuter Program	$x_{(1)} = 3$	$x_{(2)} = 2$	$x_{(3)} = 5$	--
$y_{(k)}$	Resident Program	$y_{(1)} = 1$	$y_{(2)} = 7$	$y_{(3)} = 4$	$y_{(4)} = 6$

Thus, $W_m = \sum_{j=1}^{3} x_{(j)} = 3 + 2 + 5 = 10.$

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[*] J. V. Bradley, *Distribution-Free Statistical Tests*, Prentice-Hall, Englewood Cliffs, New Jersey, 1968, p. 105.

To test whether W_m is statistically significant it is only necessary to enter tables of the cumulative probability distribution of W_n.[*] The distribution is generally tabulated for small values of m and n. For larger sample sizes it is approximately true that $(W_m - \theta - \frac{1}{2})/\sigma$ follows a normal distribution with mean zero and variance equal to one, where $\theta \equiv m(m + n + 1)/2$, and $\sigma^2 \equiv mn(m + n + 1)/12$. That is, in large samples, W_n can be tested for significance by simple use of a standard normal table.

To illustrate, consider the example summarized above where $W_m = 10$. A "one-tailed" test of equality of means at the 5-percent level of significance signifies that we are testing the hypothesis that the means of the two groups are equal against the alternative hypothesis that the mean change in verbal SAT score for girls in the resident program exceeds that for girls in the commuter program, and we are permitting a 5-percent "margin of error." Entering a table of significance values for W_m shows that for our case the critical value of W_m is 6. That is, if the observed W_m were 6 or less, it would not be significant. Since our W_m is 10, it is certainly significant, which implies, at least for this hypothetical example, that the mean for girls in the resident program exceeds that for girls in the commuter program.

An important qualifier that must be appended to all of the above is an implicit assumption about randomization of the observed data. It has been tacitly assumed that girls were randomly selected and then randomly assigned to the commuter and residential programs. Then, observed differences would be attributable strictly to differences in the programs. Such a designed experiment, however, is not really likely to be the case. For existing political and social reasons, girls cannot be randomly assigned in such a fashion; rather, they often make their own selection of program. Hence, there may be some bias introduced caused by inherent differences in the girls which causes them to choose one program over the other. In such a case observed differences in means might be *partially* attributable to the inherent bias generated by some unmeasured variables, and *partially* attributable to program differences. Such is the nature of the ambiguity introduced into any experiment in which randomization was either ignored, or for some reason was denied to the experimentor. One method of coping with such lack of randomization is covariance analysis. The discussion of this technique is deferred for the present.

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[*] See, for example, James V. Bradley, *Distribution-Free Statistical Tests*, Prentice-Hall, Englewood Cliffs, New Jersey, 1968.

Parametric Tests of Equality of Means (Correlated Observations)

Suppose it is desired to compare the effects of the Job Corps' basic education program on girls in the commuter program with that of girls in the resident program. The measure of performance to be used is change in SAT score between entering and leaving the Corps. Let $x_1, \ldots, x_N$ denote change in SAT score for N commuter program girls and $y_1, \ldots, y_N$ denote change in SAT score for N resident program girls. Suppose further that the x_j's and y_j's have been "matched," so that the pair (x_j, y_j) corresponds to two girls whose backgrounds are as close as possible in every respect, other than the fact that they are in the commuter and resident programs, respectively.[*]

The components of the pair (x_j, y_j) are correlated random variables, since the girls were given the identical basic education program. Suppose $x_j \sim N(\theta_1, \sigma^2)$, and $y_j \sim N(\theta_2, \sigma^2)$, $j = 1, 2, \ldots, N$. That is, the x_j's are mutually independent, and normally distributed with mean θ_1 and variance σ^2, and the y_j's are mutually independent and normally distributed with mean θ_2 and variance σ^2. Let ρ denote the correlation between x_j and y_j, for each j. The problem now is to test the hypothesis that $\theta_1 = \theta_2$ vs the alternative that $\theta_1 \neq \theta_2$.

For the case in which $\rho = 0$, it is well known[**] that the likelihood ratio, derived test statistic is:

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[*] See, for example, William G. Cochran, "Matching in Analytical Studies," *American Journal of Public Health*, Vol. 43, 1953, pp. 684-691.

[**] See, for example, Robert V. Hogg and Allen T. Craig, *An Introduction to Mathematical Statistics*, The Macmillan Company, New York, 1965, p. 291.

$$t_0 \equiv \frac{\sqrt{N(N - 1)}\quad(\bar{x} \quad \bar{y})}{\left[\sum_{i=1}^{N} (x_i - \bar{x})^2 + \sum_{i=1}^{N} (y_i - \bar{y})^2\right]^{1/2}} ,$$

where $\bar{x}$ and $\bar{y}$ are the sample means of the two groups of girls. Under the hypothesis that $\theta_1 = \theta_2$, t_0 follows a Student t-distribution with $2(N - 1)$ degrees of freedom.

Analogously, when $\rho \neq 0$, as in the case in our problem, the likelihood ratio test procedure suggests the test statistic:

$$t_1 = \frac{\sqrt{N(N - 1)}\quad(\bar{x} - \bar{y})}{\left[\sum_{i=1}^{N} (x_i - \bar{x})^2 + \sum_{i=1}^{N} (y_i - \bar{y})^2 - 2 \sum_{i=1}^{N} (x_i - \bar{x})(y_i - \bar{y})\right]^{1/2}}$$

When $\theta_1 = \theta_2$, t_1 follows a Student t-distribution with $(N - 1)$ degrees of freedom.

Note that it has been assumed that the variances of the two groups are the same. If it is later found that the data will not support such an assumption (even as an approximation), the problem will become somewhat more complicated and will have to be treated as a "Behrens-Fisher problem."*

Multivariate Test of Equality of Means

In comparing the means for two groups (such as girls in the Job Corps commuter program and girls in the Job Corps resident program), it is often of interest to compare them according to several characteristics simultaneously. Moreover, the random variables representing these characteristics are correlated since they are measurements on the same girl. Suppose there are p characteristics of interest for each girl (if change in SAT score, change in yearly earnings, and change in attitude were used as output variables, p would equal three). Let $x_1, \ldots, x_m$ denote m independent sets of p columns of measurements

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*See, for example, Henry Scheffé, "On Solutions of the Behrens-Fisher Problem Based on the t-Distribution," *Ann. Math. Statist.*, Vol. 14, 1943, pp. 35-44.

for m girls in the commuter program, and let $y_1, \ldots, y_n$ denote the corresponding measurements for n girls in the resident program. Suppose $x_j \sim N(\theta_1, \Sigma)$, and $y_k \sim N(\theta_2, \Sigma)$; that is, all of the p vectors of x_j's are normally distributed with mean vector* θ_1, and $p \times p$ matrix of variances and covariances Σ. Similarly, all of the y_k's are normally distributed with mean vector θ_2, and the same matrix of variances and covariances Σ. The problem is to test the hypothesis that $\theta_1 = \theta_2$ versus the alternative that $\theta_1 \neq \theta_2$; that is, to test simultaneously whether the means of the output variables in one group are the same as the corresponding means of the output variables in the other group.

In our hypothetical example, $p = 3$. If $\theta_1' = (\theta_{11}, \theta_{21}, \theta_{31})$, and $\theta_2' = (\theta_{12}, \theta_{22}, \theta_{32})$, the problem is to test whether $\theta_{11} = \theta_{12}$ and $\theta_{21} = \theta_{22}$, and $\theta_{31} = \theta_{32}$.

The likelihood ratio test procedure for this problem is to compute

$$U \equiv \left[\frac{m + n - p - 1}{(m + n - 2)\, p}\right] \left[\frac{mn}{m + n}\right] (x - \bar{y})' \, S^{-1} \, (\bar{x} - \bar{y}),$$

where $\bar{x}$ and $\bar{y}$ are the sample mean vectors of the x_j's and y_k's, respectively, and

$$S \equiv \frac{1}{m + n - 2} \left[\sum_1^m (x_j - \bar{x})\, (x_j - \bar{x})' + \sum_1^n (y_k - \bar{y})\, (y_k - \bar{y})'\right] .$$

The primes are used to denote transpose. Then, the significance of U may be tested** by using the fact that when $\theta_1 = \theta_2$, U follows an F-distribution with p and $(m + n - p - 1)$ degrees of freedom.

Suppose alternatively that p separate tests were carried out, one for each of the output variables. By so doing, the correlations among the variables would be ignored so that information in one output variable about the other output variables would be lost. This inefficiency shows up in a loss of ability to detect small differences in the means of the two groups of girls. Hence, it is desirable to use the multivariate procedure outlined above.

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*Note that all vectors are assumed to be columns, unless primed.

**See, for example, Samuel S. Wilks, *Mathematical Statistics*, John Wiley & Sons, New York, 1962, p. 559.

Note that if the assumption of equal covariance matrices for the two groups proves to be unwarranted, a multivariate Behrens-Fisher problem will result. In such an event, a more complicated solution is required.[*]

STATISTICAL METHODS FOR RELATING VARIABLES

In evaluating the performance of Job Corps programs it is necessary to establish relationships among the basic input and output variables and to make comparative studies of the effects on the corpswomen of different competing programs, after adjustments are made for the different characteristics of the girls.

For example, to compare the change in verbal and quantitative SAT score performances of girls in the commuter program with that of girls in the resident program, we must allow for differences among girls. Girls will tend to differ in performance because of differences in racial and ethnic background, differences in economic background and familial social structure, differences in geographic origin of childhood development (rural vs. urban environment differences, as well as North-South-East-West cultural differences). Also, the girls will differ in age and maturity level (and will mature at different rates during the basic education and vocational training programs). The statistical model proposed for studying the differential effects of the programs is the "analysis of covariance." One of the major uses of this statistical method of analysis is to deal effectively with experiments which were not designed, and in which the observations were not randomized. In this connection the following quotation may be of some interest:[**]

> In the fields of research in which randomized experiments are not feasible, we may observe two or more groups differing in some characteristic, in the hope of discovering

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[*] See, for example, B. M. Bennett, "Note on a Solution of the Generalized Behrens-Fisher Problem," *Annals of the Institute of Statistical Mathematics,* Vol. 2, 1951, pp. 87-90.

[**] William G. Cochran, "Analysis of Covariance: Its Nature and Uses," *Biometrics*, Vol. XIII, September 1957, pp. 261-281.

> whether there is an association between this characteristic and a response. . . . In observational studies it is widely recognized that an observed association, even if statistically significant, may be due wholly or partly to other disturbing variables x_1, x_2, ... in which the groups differ. Where feasible, a common device. . . is to match the groups for the disturbing variables thought to be most important. In the same way, a covariance adjustment may be tried for x-variables that have not been matched. . . . Unfortunately, observational studies are subject to difficulties of interpretation from which randomized experiments are free. Although matching and covariance have been skillfully applied, we can never be sure that bias may not be present from some disturbing variable that was overlooked. In randomized experiments, the effects of this variable are distributed among the groups by the randomization in a way that is taken into account in the standard tests of significance. There is no such safeguard in the absence of randomization.

The analysis of covariance is likely to be a useful approach to Job Corps program evaluation. It is no panacea, however, for non-randomized experiments such as ours, and it is not without pitfalls and a variety of required assumptions. Thus, if important variables are inadvertently omitted from the analysis, an unwanted bias will be introduced into the results. Practically speaking, it is almost impossible to eliminate all sources of such bias. But by careful study of the fundamental economic and sociological theory underlying the desired relationships, such undesirable bias may be kept to a minimum.

One effect of omitting important variables on the analysis is to introduce "error terms" that are mutually correlated. These error terms are present in all analysis of variance models as a catch-all for omitted variables, errors of measurement, and imperfectly specified functional forms for the underlying relationship among the variables. Moreover, a principal assumption of the analysis of variance model is that the error terms are mutually uncorrelated. Since important omitted variables may often lead to correlated (and therefore, dependent) errors, this fundamental assumption would then be violated. The effect would be to render inefficient the estimators of the parameters of the model (the differential effects of Job Corps performance in the two programs), in that they would have greater variance than would be the case if important variables were not omitted. To compensate in such a case, the "residuals" from the analysis (the observed values of the output variables minus the values of the output variables estimated by the model) could be studied to determine the nature of the dependence of the errors. It may then be possible to obtain better estimators of the desired effects by accounting for the dependence analytically by using the method of generalized least squares estimation.

Another type of statistical model which is needed to relate input and output variables is the specialized type of regression model in which the observations on the dependent variables are all either zero or one. The general idea in regression models is to postulate a functional form for the relationship between the input and output variables, and then to estimate the unknown parameters in the assumed relationship. If, for example, the output variable connotes whether or not a positive change in attitude of the girl took place, the variable can be quantified as a one or a zero (one, if there was a positive change, and zero, otherwise). Thus, if y_j denotes the output variable for the j^{th} girl, $y_j = 1$ implies her attitude changed positively, and $y_j = 0$ implies it didn't. The variable y_j can now be related to the various socioeconomic and demographic characteristics (input variables) of the girl by postulating an appropriate functional form. This type of model will be called a "zero-one regression." The associated methodology for parameter estimation is outlined in a subsequent subsection.

Analysis of Covariance

Suppose we wish to compare girls in the Job Corps resident and commuter programs with regard to the changes induced in their verbal SAT scores between entering and leaving the Corps. Suppose further that in this comparison we wish to account for ethno-racial differences, and for age differences, so that any differential effects found will not be attributable in part to ethno-racial or age factors (there may also be other factors of interest, and we may want to compensate for those factors as well, but they will be ignored in the interest of simplicity in this illustrative example).

Let y_{ijk} denote change in verbal SAT score for girl number k in program j whose ethno-racial background is i; i = 1 denotes Black, i = 2 denotes Mexican-American, and i = 3 denotes Anglo and Others; j = 1 denotes that the girl is in the residential program and j = 2 denotes that she is in the commuter program. Thus, $y_{127} = 12$ would mean that the seventh girl being used in the evaluation was Black, was in the commuter program, and that her change in verbal scores was 12 points. The model is now expressed as follows. Let

$$y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_{ij} + \delta\, x_{ijk} + e_{ijk} \quad ,$$

where μ is an additive constant, α_i is the change in score (called "effect") attributable to ethno-racial differences, β_j is the change in score (effect) attributable to the program the girl is in (commuter or residential), γ_{ij} is a term representing "interaction" between the i^{th} ethno-racial effect and the j^{th} program effect (if the effects are additive, $\gamma_{ij} = 0$), x_{ijk} denotes the age of the k^{th} girl, δ is a proportionality constant, and e_{ijk} is an error term. Thus, observed change in reading score is broken down into a change attributable to a girl's ethnic or racial background, a change attributable to her enrollment in the commuter program as opposed to the residential program, a change attributable to the combination of both of the above effects, a term proportional to the girl's age, and an error term to account for any residue in the relationship. Note that "ethno-racial background" and "program" are qualitative variables defined on a nominal scale. They are accounted for merely by indexing them by i and j. Age, on the other hand, is a quantitative variable defined on an interval scale. If δ were zero, the model in this example would correspond to an analysis of variance with *two* factors (two-way layout). Conversely, if α_i, β_j, and γ_{ij} were all zero, the model would correspond to a simple linear regression (*one* independent variable). Since both analysis of variance terms and regression terms are present, the model is referred to as a two-way analysis of covariance with one "covariate" (age). Depending upon which covariance analysis we are doing, we may have a one-way analysis, or a two-, or three-, or multiple-way analysis, with one, two, or more covariates.

To determine whether there are differences in the girl's verbal SAT scores in the two programs, "all other things being equal," is to test the hypothesis $\beta_1 = \beta_2$ versus the alternative hypothesis that they are not equal. To test this hypothesis all parameters are estimated by least squares and if the errors can be assumed to be normally distributed, there are standard tests based upon the *t*-distribution that are applicable. One computer program for carrying out this analysis which is readily available is BMD04V in the series of Biomedical Computer Programs available through the Health Sciences Computing Facility at the University of California at Los Angeles (UCLA). If it is found that when there is a statistically significant difference in the change in verbal score for the two programs, it is then possible to estimate the extent of the difference by using a confidence interval based upon the Student *t*-distribution.*

Zero-One Regression Model

In the conventional regression framework, the output variable for the j^{th} girl, y_j, is related to the input variables, x_{ij}, x_{2j}, ..., x_{kj}, through a model, linear in the parameters, of the form:

$$y_j = \beta_0 + \beta_1 x_{1j} + \beta_2 x_{2j} + \dots + \beta_k x_{kj} + e_j \quad ,$$

$j=1, \dots, n$, where $\beta_0, \beta_1, \dots, \beta_k$ are unknown coefficients, and e_j is an error term. Assumptions are made about e_j to the effect that $Ee_j = 0$ (the expected value of the error term is zero), Var $(e_j) = \sigma^2$, for all j (error terms for all girls have the same variance), and the e_j's are mutually uncorrelated. Moreover, for the purpose of making statistical inferences, it is generally assumed that e_j is normally distributed. For these assumptions to be valid it is clearly necessary (but not sufficient) that y_j be variable between minus infinity and plus infinity. That is, if y_j can only be zero or unity, and if the x_{ij}'s are held fixed, e_j cannot possibly be normally distributed.

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*A detailed explanation of the assumptions and equations involved may be found, for example, in Henry Scheffé, *The Analysis of Variance*, John Wiley and Sons, New York, 1959, Chapter 6.

The alternative to this type of model which we plan to use for our problem is developed below.

Suppose $y_j = 1$ when the j^{th} girl has experienced a positive change in attitude as a result of being in the Job Corps, and $y_j = 0$ when she has not experienced such a positive change (that is, either if there was no attitudinal change, or if there was a negative change). It is desired to relate y_j to a collection of input socioeconomic and demographic variables and some variables which are subject to the change and control of Job Corps administrators (such as length of basic education program, length of vocational training program, dollars granted to each girl during her stay, and so on). The distribution of y_j will be defined so that y_j can be one or zero, but still related to $\beta_0 x_{0j} + \beta_1 x_{1j} + \ldots + \beta_k x_{kj}$, where x_{ij} denotes the value of the i^{th} input variable for the j^{th} girl. If $\beta' \equiv (\beta_0, \beta_1, \ldots, \beta_k)$, and x'_j $(x_{0j}, \ldots, x_{kj})$ denote row vectors in $(k + 1)$ space,

$$\beta_0 x_{0j} + \beta_1 x_{1j} + \ldots + \beta_k x_{kj} = \beta' x_j \quad ,$$

which is a more convenient shorthand notation.

The approach now applied is borrowed from the theory of Bioassay in which Probit Analysis is a principal tool used for handling this type of problem.* In the Bioassay problem there is a dosage level of a drug administered to the j^{th} animal (subject) at which the animal responds ($y_j = 1$), and below which he does not respond ($y_j = 0$). This threshold level will vary from subject to subject, and the actual threshold level is a random variable for any given subject. Let z_j denote the threshold level, and $\beta' x_j$ denote the dosage (in our problem, the dosage is a treatment, as specified by a linear combination of the input variables). Then,

$$y_j = \begin{cases} 1, & \text{if} \quad z_j \leq \beta' x_j \quad , \\ 0, & \text{if} \quad z_j > \beta' x_j \quad . \end{cases}$$

---

*See, for example David J. Finney, *Probit Analysis*, Cambridge University Press, New York, 2nd ed., 1952.

There are various assumptions that may be made about the distribution of z_j. The most common one (and the one used in Probit Analysis) is that the z_j's are independent and $z_j \sim N(0, 1)$; that is, x_j's are standard (mean zero and variance one) normal variables, for every j. Other distributional assumptions sometimes used are the logistic distribution and a distribution involving an inverse tangent function. However, since extremely large sample sizes are required for distinguishing among these assumptions, we will adopt the normality assumption which will be quite sufficient for the level of precision of the exploratory research we are doing.

Let $\Phi(t)$ denote the cumulative distribution function (cdf) of a standard normal random variable; that is,

$$\Phi(t) \equiv \int_{-\infty}^{t} \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}v^2} \, d\, v \quad .$$

Then,[*] for fixed x_j, $P\,\{z_j \leq \beta' x_j\} = \Phi(\beta' x_j)$. That is, the distribution of y_j is given by:

$$P\,\{y_j = 1 |\; x_j\} = \Phi(\beta' x_j),$$

and

$$P\,\{y_j = 0 |\; x_j\} = 1 - \Phi(\beta' x_j) \quad .$$

Hence, $E(y_j |\; x_j) = P\,\{y_j = 1 |\; x_j\} = \Phi(\beta' x_j)$. Then, if $\hat{\beta}$ denotes the estimated value of β, and if $\hat{y}_j$ denotes the value of y_j predicted by the regression,

$$\hat{y}_j = \Phi(\hat{\beta}' x_j) = \int_{-\infty}^{\hat{\beta}' x_j} \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}v^2} \, d\, v \quad .$$

Thus, if x^* denotes a vector of values for a new girl just entering the Job Corps, the prediction for her change in attitude is

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[*] Recall that since $\Phi(t)$ is a cdf, $0 \leq \Phi(t) \leq 1$.

$$\hat{y}^* = \Phi(\beta' X^*) = \int_{-\infty}^{\hat{\beta}' X^*} \frac{1}{\sqrt{2\pi}} \, e^{-\frac{1}{2} v^2} \, dv \, .$$

That is, $\hat{y}^*$ is a number lying between zero and unity, and if $\hat{y}^*$ exceeds 0.5, it is likely this girl will experience a positive change in attitude in the program; otherwise, it is not (of course, the closer $\hat{y}^*$ is to unity or to zero, the stronger is the prediction).

The only problem remaining is to estimate the unknown coefficients of the model. This will be accomplished by the method of maximum likelihood.

Suppose that for a sample of n girls, we observe $y_1, \ldots, y_n$. The joint density of the y_j's is the likelihood function for n independent Bernoulli variables. Thus, if p_j denotes the probability that $y_j = 1$, the likelihood function is

$$L = \prod_{j=1}^{n} \left[p_j^{y_j} (1 - p_j)^{1-y_j} \right] \, .$$

Since $p_j \equiv \Phi(\beta' x_j)$,

$$L = \prod_{j=1}^{n} [\Phi(\beta' x_j)]^{y_j} \, [1 - \Phi(\beta' x_j)]^{1-y_j} \, .$$

Taking logs gives

$$L^* \equiv \log L = \sum_1^n y_j \log \Phi(\beta' x_j) + \sum_1^n (1 - y_j) \log [1 - \Phi(\beta' x_j)] \, .$$

Differentiating L^* with respect to the vector β (to find the maximum of L^*), setting the results equal to zero, and solving, gives

$$\sum_{j=1}^{n} \frac{y_j \, \psi(\beta' x_j)}{\Phi(\beta' x_j)} \, x_j \quad \sum_{j=1}^{n} \frac{(1 - y_j) \, \psi(\beta' x_j)}{1 - \Phi(\beta' x_j)} \, x_j \, ,$$

where $\psi(t) \equiv \frac{1}{\sqrt{2\pi}} \exp \{- t^2/2\}$ denotes the normal density function. Since x_j is a $(k + 1) \times 1$ vector, this result really represents a system of $(k + 1)$ equations in the $(k + 1)$ unknown components of β. They may be solved numerically for $k = 1$ by computer using BMD-03S in the series of computer routines available from the UCLA Health Sciences Computing facility. The result is $\hat{\beta}$, the maximum likelihood estimator of β.

Appendix B

DATA COLLECTION

The Los Angeles Women's Job Corps Center maintains a substantial research staff whose responsibilities include in-Center evaluation. For this purpose the Center has developed an extensive internal data acquisition process. In order to minimize disruption of Center activities we have not instituted a separate data-collection program. Rather, we have incorporated our data needs into the in-Center process.

Consequently, where possible, we have relied upon the use of data routinely collected by Center staff. In those cases where needed data was not collected, we have been allowed to insert our questions into existing questionnaires. The Center's research staff has retained complete responsibility for interviewing and coding completed questionnaires.

This Appendix contains, with the exception of published materials, edited reproductions of all data sources available at the LAWJCC. We specified the use of attitudinal instruments designed by Freeberg and Walther in Section VI. These are available in the literature and are not reproduced here.[*] Similarly, the Stanford Achievement Tests are widely available and are not illustrated here.[**] In the interest of economy of space, we have suppressed all precoded answer columns in the forms. We have also eliminated the blank spaces provided for responses to open-ended questions. In the original, each questionnaire had a cover sheet which identified the responding corpswoman by name and number. The interviewer and the date of the interview were also noted on the cover page. These cover pages have been deleted in the reproductions.

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[*] See Norman Freeberg, *Assessment of Disadvantaged Adolescents: A Different Approach to Research and Evaluation Measures*, Research Bulletin 69-41, Educational Testing Service, Princeton, May 1969; and Regis Walther, *The Measurement of Work Relevant Attitudes*, Social Research Group, The George Washington University, February 1968.

[**] Harcourt, Brace, and World, 1965.

Table B-1 presents the time sequence with respect to each corpswoman of the various data collection efforts. The person responsible for obtaining each data segment as well as a general description of the information sought in each segment is also provided there. Table B-2 contains similar information for the data sources not reproduced below.

Table B-1

PARTIAL SUMMARY OF DATA COLLECTION EFFORT

CENTER-SPECIFIC INSTRUMENTS

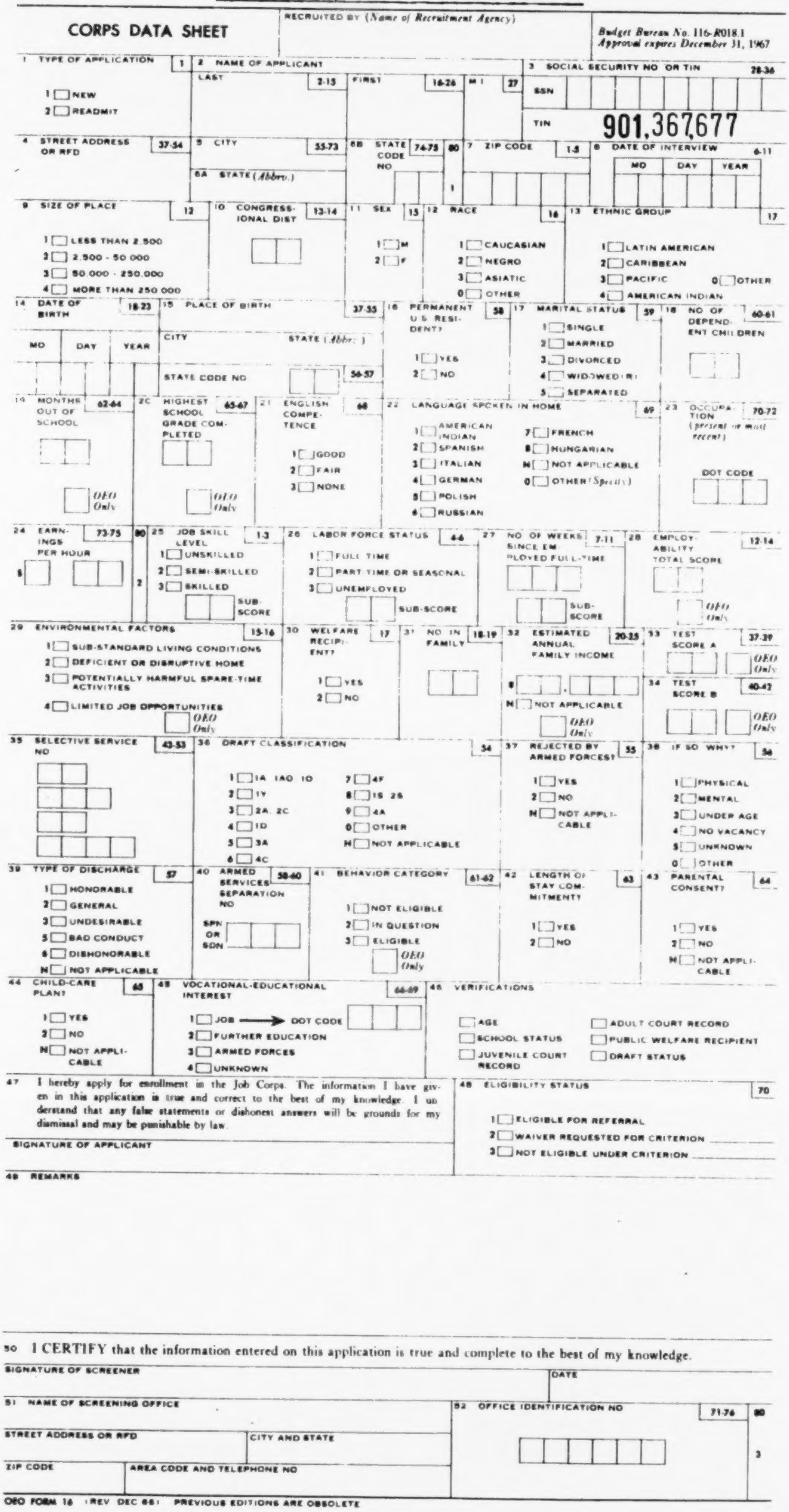
Item	Instrument Title	When Collected	By Whom	Type of Data Obtained
B-1	Basic Data Form	At time girl applies for admission into Job Corps	Recruiter	Demographic
B-2	Intake Interview Form A	Within 2 weeks after entry	Guidance (residents) & Field (nonresidents) Staffs	Demographic
B-3	Intake Interview Form B	3-4 weeks after entry	Basic education teachers	Educational history & indirect attitude measures
B-4	Employment Interview	3-4 weeks after entry	Research staff	Employment history
B-5	Basic Education Evaluation	10-11 weeks after entry (at end of basic education)	Basic education teachers	Educational attainment
B-6	Attendance card	weekly	Basic education teachers	Attendance in basic education
B-7	Staff Evaluation of Corpswomen	13th to 14th week (within 2 weeks of attitudinal tests)	All counselors & teachers	Staff impressions of Corpswomen's attitudes
B-8	Report of Vocational Training in Progress	End of vocational training	Vocational counselor	Vocational attainment
B-9	Record of Staff Contact	Weekly	All Center staff	Patterns of counseling contacts
B-10	Report of Group Meetings or Activities	Monthly	Vocational counselor	Extent of group participation
B-11	Vocational Record	Termination	Vocational counselor	Summary of vocational experiences and attainment
B-12	Exit Interview	Termination	Research staff	Reaction to Job Corps and indirect attitude measures

Table B-2

PARTIAL SUMMARY OF DATA COLLECTION EFFORT:
PUBLISHED INSTRUMENTS

Instrument Title	When Collected	By Whom Collected	Type of Data Obtained
Stanford Achievement Tests			
Form X	Entry: Within 2 weeks	Research Staff	Achievement in reading and mathematics
Form W	Completion of Basic Education (week 11)		
Form Y	Termination		
Freeberg items	Week 11 or 12 and week 46 or 47 or at termination if prior to week 46	Research Staff	Attitudes toward work
Walther items			Self-concept and attitudes toward the world

Item B-1, CORPS DATA SHEET



CORPS DATA SHEET

RECRUITED BY (*Name of Recruitment Agency*)

Budget Bureau No. 116-R018.1
Approval expires December 31, 1967

1 TYPE OF APPLICATION 1
1 ☐ NEW
2 ☐ READMIT

2 NAME OF APPLICANT
LAST 2-15
FIRST 16-26
M I 27

3 SOCIAL SECURITY NO OR TIN 28-36
SSN
TIN 901,367,677

4 STREET ADDRESS OR RFD 37-54

5 CITY 55-73
6A STATE (*Abbrv.*)

6B STATE CODE NO 74-75
80
1

7 ZIP CODE 1-5

8 DATE OF INTERVIEW 6-11
MO DAY YEAR

9 SIZE OF PLACE 12
1 ☐ LESS THAN 2.500
2 ☐ 2.500 - 50 000
3 ☐ 50.000 - 250.000
4 ☐ MORE THAN 250 000

10 CONGRESSIONAL DIST 13-14

11 SEX 15
1 ☐ M
2 ☐ F

12 RACE 16
1 ☐ CAUCASIAN
2 ☐ NEGRO
3 ☐ ASIATIC
0 ☐ OTHER

13 ETHNIC GROUP 17
1 ☐ LATIN AMERICAN
2 ☐ CARIBBEAN
3 ☐ PACIFIC
4 ☐ AMERICAN INDIAN
0 ☐ OTHER

14 DATE OF BIRTH 18-23
MO DAY YEAR

15 PLACE OF BIRTH 37-55
CITY
STATE (*Abbr.*)
STATE CODE NO 56-57

16 PERMANENT U S RESIDENT? 58
1 ☐ YES
2 ☐ NO

17 MARITAL STATUS 59
1 ☐ SINGLE
2 ☐ MARRIED
3 ☐ DIVORCED
4 ☐ WIDOWED(ER)
5 ☐ SEPARATED

18 NO OF DEPENDENT CHILDREN 60-61

19 MONTHS OUT OF SCHOOL 62-64
☐ *OEO Only*

20 HIGHEST SCHOOL GRADE COMPLETED 65-67
☐ *OEO Only*

21 ENGLISH COMPETENCE 68
1 ☐ GOOD
2 ☐ FAIR
3 ☐ NONE

22 LANGUAGE SPOKEN IN HOME 69
1 ☐ AMERICAN INDIAN
2 ☐ SPANISH
3 ☐ ITALIAN
4 ☐ GERMAN
5 ☐ POLISH
6 ☐ RUSSIAN
7 ☐ FRENCH
8 ☐ HUNGARIAN
N ☐ NOT APPLICABLE
0 ☐ OTHER (*Specify*)

23 OCCUPATION (*present or most recent*) 70-72
DOT CODE

24 EARNINGS PER HOUR 73-75
$
80
2

25 JOB SKILL LEVEL 1-3
1 ☐ UNSKILLED
2 ☐ SEMI-SKILLED
3 ☐ SKILLED
SUB-SCORE

26 LABOR FORCE STATUS 4-6
1 ☐ FULL TIME
2 ☐ PART-TIME OR SEASONAL
3 ☐ UNEMPLOYED
SUB-SCORE

27 NO OF WEEKS SINCE EMPLOYED FULL-TIME 7-11
SUB-SCORE

28 EMPLOYABILITY TOTAL SCORE 12-14
☐ *OEO Only*

29 ENVIRONMENTAL FACTORS 15-16
1 ☐ SUB-STANDARD LIVING CONDITIONS
2 ☐ DEFICIENT OR DISRUPTIVE HOME
3 ☐ POTENTIALLY HARMFUL SPARE-TIME ACTIVITIES
4 ☐ LIMITED JOB OPPORTUNITIES
☐ *OEO Only*

30 WELFARE RECIPIENT? 17
1 ☐ YES
2 ☐ NO

31 NO IN FAMILY 18-19

32 ESTIMATED ANNUAL FAMILY INCOME 20-25
$,
N ☐ NOT APPLICABLE
☐ *OEO Only*

33 TEST SCORE A 37-39
☐ *OEO Only*

34 TEST SCORE B 40-42
☐ *OEO Only*

35 SELECTIVE SERVICE NO 43-53

36 DRAFT CLASSIFICATION 54
1 ☐ 1A 1AO 1O
2 ☐ 1Y
3 ☐ 2A 2C
4 ☐ 1D
5 ☐ 3A
6 ☐ 4C
7 ☐ 4F
8 ☐ 1S 2S
9 ☐ 4A
0 ☐ OTHER
N ☐ NOT APPLICABLE

37 REJECTED BY ARMED FORCES? 55
1 ☐ YES
2 ☐ NO
N ☐ NOT APPLICABLE

38 IF SO WHY? 56
1 ☐ PHYSICAL
2 ☐ MENTAL
3 ☐ UNDER AGE
4 ☐ NO VACANCY
5 ☐ UNKNOWN
0 ☐ OTHER

39 TYPE OF DISCHARGE 57
1 ☐ HONORABLE
2 ☐ GENERAL
3 ☐ UNDESIRABLE
5 ☐ BAD CONDUCT
6 ☐ DISHONORABLE
N ☐ NOT APPLICABLE

40 ARMED SERVICES SEPARATION NO 58-60
SPN OR SDN

41 BEHAVIOR CATEGORY 61-62
1 ☐ NOT ELIGIBLE
2 ☐ IN QUESTION
3 ☐ ELIGIBLE
☐ *OEO Only*

42 LENGTH OF STAY COMMITMENT? 63
1 ☐ YES
2 ☐ NO

43 PARENTAL CONSENT? 64
1 ☐ YES
2 ☐ NO
N ☐ NOT APPLICABLE

44 CHILD-CARE PLAN? 65
1 ☐ YES
2 ☐ NO
N ☐ NOT APPLICABLE

45 VOCATIONAL-EDUCATIONAL INTEREST 66-69
1 ☐ JOB → DOT CODE
2 ☐ FURTHER EDUCATION
3 ☐ ARMED FORCES
4 ☐ UNKNOWN

46 VERIFICATIONS
☐ AGE
☐ SCHOOL STATUS
☐ JUVENILE COURT RECORD
☐ ADULT COURT RECORD
☐ PUBLIC WELFARE RECIPIENT
☐ DRAFT STATUS

47 I hereby apply for enrollment in the Job Corps. The information I have given in this application is true and correct to the best of my knowledge. I understand that any false statements or dishonest answers will be grounds for my dismissal and may be punishable by law.

SIGNATURE OF APPLICANT

48 ELIGIBILITY STATUS 70
1 ☐ ELIGIBLE FOR REFERRAL
2 ☐ WAIVER REQUESTED FOR CRITERION ________
3 ☐ NOT ELIGIBLE UNDER CRITERION ________

49 REMARKS

50 I CERTIFY that the information entered on this application is true and complete to the best of my knowledge.

SIGNATURE OF SCREENER
DATE

51 NAME OF SCREENING OFFICE
STREET ADDRESS OR RFD
CITY AND STATE
ZIP CODE
AREA CODE AND TELEPHONE NO

52 OFFICE IDENTIFICATION NO 71-76
80
3

OEO FORM 16 (REV DEC 66) PREVIOUS EDITIONS ARE OBSOLETE

Item B-2

INTAKE INTERVIEW, FORM A

I'd like to ask you a few questions about yourself.

1. Where were you living just before you came to Job Corps?

   City __________ State __________

   How long were you living there?

   (IF LESS THAN 3 YEARS ASK)

   Where did you live before that?

   City __________ State __________

   How long did you live there?

2. Have you lived most of your life in a large city, small town, or in the country?

3. Were your parents (or legal guardians) brought up in a large city, small town, or the country?

4. Are your parents living?

5. How many older brothers and sisters do you have?

   How many younger brothers and sisters do you have?

6. How many people were living in your house (not including yourself) when you enrolled in Job Corps?

   How are these people related to you, and how old are they? Was anyone else living there?

   (IF NOT LIVING WITH PARENTS OR GUARDIANS ASK)

   How old were you when you left home?

7. Who supported you before you came to Job Corps?

   Were they the head of the house?

   (IF NO)

   Who was?

8. Does (did) your father (or male guardian) work?

   (IF YES)

   What does (did) he do?

   (ASK ALL)

   What is the highest grade of school he completed?

9. Does (did) your mother (or female guardian) work?

   (IF YES)

   What does (did) she do?

   (ASK ALL)

   What is the highest grade of school she completed?

10. To what race or ethnic group do you belong?

11. What language is spoken in your home?

Now I'd like to know how you got to Job Corps.

12. How did you first hear about Job Corps?

13. Have any of your friends or relatives been in Job Corps?

14. What made you decide to come to Job Corps? (PROBE)

15. Have you been told what Vocational Training is offered in Job Corps?

16. While you are in Job Corps what kind of skill do you want to learn?

I'd also like to know something about your activities before you came here.

17. Outside of school, did you belong to any club or organization or groups that held meetings?

    (IF YES)

    What clubs or organizations were they? Any others?

    Could they be called a gang?

    Were you an officer or leader of any of these groups?

18. What are your goals right now?

Item B-3

INTAKE INTERVIEW, FORM B

I'd like to know some things about your school experiences.

1. What is the highest grade you completed?

2. Why did you leave school? Any other reasons?

3. What about your school, did you like it a lot, a little, or hardly at all?

   What did you like the most about school?

   What did you like the least about school?

(IF DID NOT GRADUATE ASK)

4. How old were you when you left school?

   Did anyone object to your leaving school?

   (IF YES, WHO?)

5. What things would have had to be different to keep you in school? (PROBE)

(ASK ALL)

6. Thinking back, how many different schools did you attend while in grades 1-6?

   Grades 7 and 8?

   Grades 9 - 12?

7. How important was getting good marks in school to you?

8. How about the kids you went around with -- was getting good marks very important to them, a little important, or not too important?

9. Of your friends, did most of them drop out of school, some of them, or very few of them?

10. This may be a hard question to answer, but as far as you know how smart do other people think you are?

11. How smart do you think you are?

12. Did you belong to any clubs, organizations, or athletic teams connected with school?

(IF YES)

To which ones did you belong?

Were you an officer or leader of any of these?

(IF NOT A GRADUATE)

13. Do you think you will get your G.E.D. or High School Diploma while in Job Corps?

(ASK ALL)

14. Do you think you'll go to school after Job Corps?

(IF YES)

What kind of school?

How far would you like to go?

Item B-4

EMPLOYMENT INTERVIEW

1. Have you worked at all in the past 3 years?

   (IF NO, SKIP TO #4)

(IF YES)

2. Where did you work last?

   Industry

   Job Title

   Duties

   Hrs. per week

   Pay per hour (or) Pay per week

   How long did you work there?

      When did you leave?

      When did you start?

      Between __________ and the time you entered the Job Corps were you looking for a job?

      (IF YES)

      What problems did you run into?

(ASK ALL)

3. What were you doing?

(IF NEVER EMPLOYED)

4. Have you looked for a job in the past 3 years?

   (IF YES)

   What problems did you run into?

   (IF NO)

   What were you doing?

5. What was the highest grade you completed?

   When was it?

   (IF EARLIER THAN JUNE 1966 ASK)

6. Between the date when you left school and the date when you began your first job, have you been unemployed, part-time employed, or fully employed (most of the time)?

7. Since you left school, have you been in any job training program aside from Job Corps?

(IF YES)

How many? What kind of training was it?

Who provided this training? ______________________________
Name of Agency or Project

Did you complete the training?

How long were you in training?

Did you ever use the training?

(IF YES)

How?

(IF NO)

Why?

Item B-5

BASIC EDUCATION EVALUATION

Corpswoman ________ Age ____ Room No. ______ Teacher _________

Arrival Date _____ Date Entered Basic Ed _____ Exit Date ________

No. Weeks in Basic Education __________

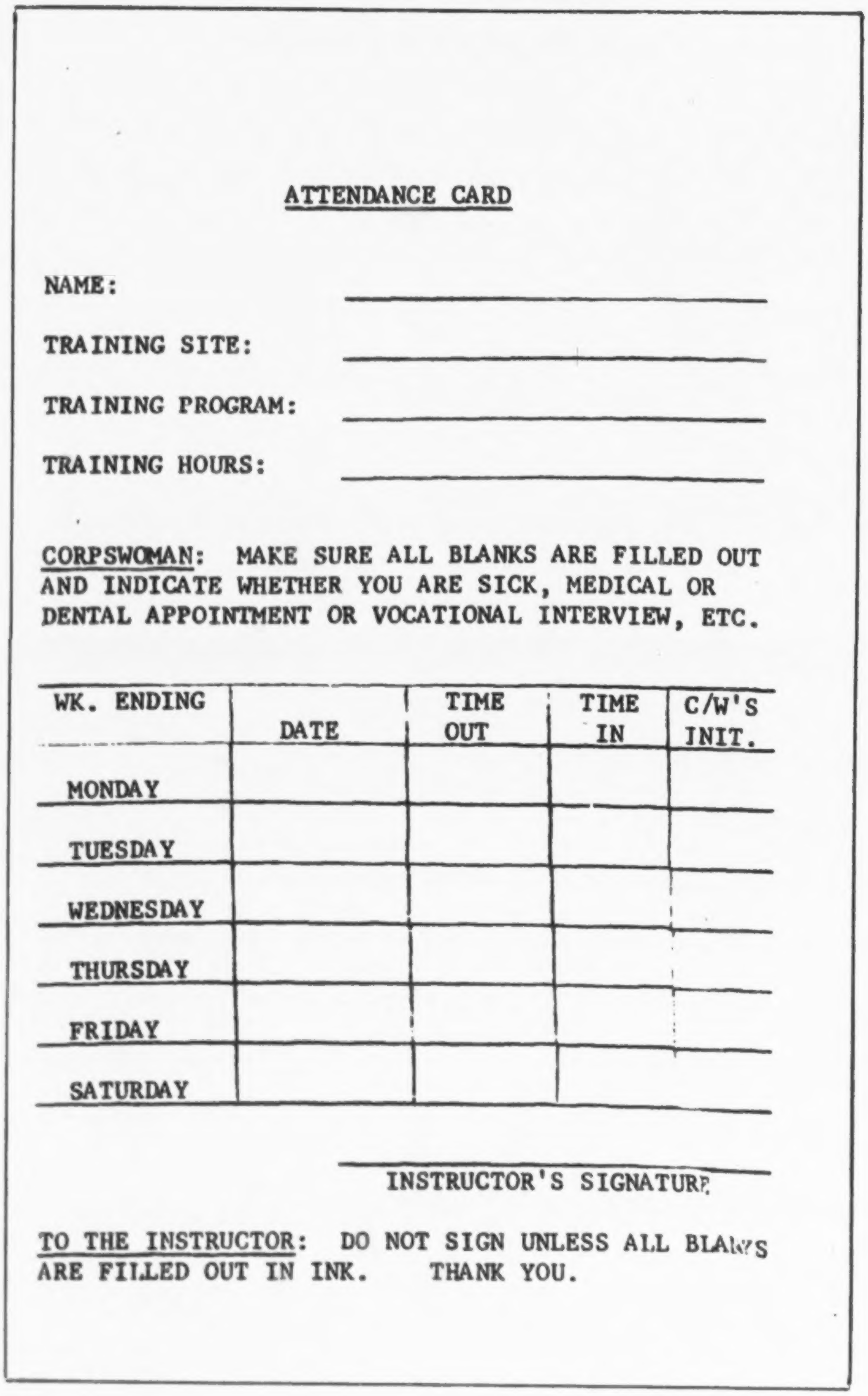
Entry Real Level J/C ___ P.S. ___ Exit Read Level J/C ___ P.S. ___

Entry Math Level J/C ___ P.S. ___ Exit Math Level J/C ___ P.S. ___

Performance:

1. C/W's ability to comprehend commonly encountered reading.
2. C/W's ability to solve basic math problems.
3. C/W's attitude toward learning.
4. C/W's motivation to increase levels.
5. C/W's potentials.
6. C/W's attendance.
7. C/W's academic progress in Basic Education.
8. C/W's social/behavioral progress in Basic Education.
9. C/W's communication skills (oral and written).
10. Teacher's recommendation.

Item B-6, ATTENDANCE CARD



ATTENDANCE CARD

NAME: ______________________

TRAINING SITE: ______________________

TRAINING PROGRAM: ______________________

TRAINING HOURS: ______________________

CORPSWOMAN: MAKE SURE ALL BLANKS ARE FILLED OUT AND INDICATE WHETHER YOU ARE SICK, MEDICAL OR DENTAL APPOINTMENT OR VOCATIONAL INTERVIEW, ETC.

WK. ENDING	DATE	TIME OUT	TIME IN	C/W'S INIT.
MONDAY				
TUESDAY				
WEDNESDAY				
THURSDAY				
FRIDAY				
SATURDAY				

____
INSTRUCTOR'S SIGNATURE

TO THE INSTRUCTOR: DO NOT SIGN UNLESS ALL BLANKS ARE FILLED OUT IN INK. THANK YOU.

Item B-7

STAFF EVALUATION OF CORPSWOMEN

This questionnaire is being done by staff members who have had program contact with the Corpswomen. We are asking you to fill this out now as we would like to receive responses on a Corpswoman from separate staff members in the same point in time.

First we would like to know --

How well do you know the Corpswoman?

Now please indicate whether you think each of the following statements: really describes the Corpswoman, usually describes her, usually does not describe her, or really does not describe her.

1. Appears to have a positive view of herself.
2. Appears to have a positive view of the world.
3. Appears self-confident.
4. Appears to have a realistic view of herself.
5. Appears to have a realistic view of the world.
6. Has problems dealing with girls of other races.
7. Makes her own plans for her free time.
8. Appears to be able to cope with the world as she views it.
9. Accepts help with problems.
10. Carries through on things she starts.
11. Appears to be self-motivated.
12. Appears to feel that others control her life.
13. What are the problems you think the girl most needs help with in order to make her employable?
14. Would you please make any other comments about the Corpswoman that you feel will be helpful to us?

Item B-8

REPORT OF VOCATIONAL TRAINING IN PROGRESS

Trainee______________________________ School or Program____________________
Last First

Rater's Signature______________________________Report Date__________

Ratings of Traits for Employment Readiness

TRAIT	EMPLOYABILITY SCALE				
	Not with it	Needs more push	Can make it	Almost there	Employable
1. Attendance					
2. Punctuality					
3. Cooperation with Trainer					
4. Teamwork					
5. Motivation for Work					
6. Concentration Ability					
7. Self-expression					
8. Tolerance for Criticism					

Ratings of Specific Work Tasks for Employment Readiness:

A–outstanding; B–very good; C–acceptable; D–needs to improve; N–not adaptable for this vocation; U–unable to evaluate

Subjects or Work Task	Rating	Subjects or Work Task	Rating
1.		6.	
2.		7.	
3.		8.	
4.		9.	
5.		10.	

Comments on Work Strengths or Weaknesses: ______________________________

Item B-9

RECORD OF STAFF CONTACT AND INDIVIDUAL CORPSWOMAN CONFERENCE

Staff Member: ________ Department: ________ For Week Ending (Sunday): ____________

Name of Corpswoman	Date	Time of Day	Length in Minutes	Topics Discussed	Initiation of Conference		Reason for Conference or Contact Initiated	Action Planned or Taken on Behalf of Corpswoman
					How	Who		

Item B-10

REPORT OF GROUP MEETINGS OR ACTIVITIES

NAME OF GROUP: ______________________ **FOR MONTH OF:** ______________

STAFF MEMBER: ______________________ **DEPARTMENT:** ______________

DATES	TIME	LENGTH	*SUMMARY
(1)			
(2)			
(3)			
(4)			
(5)			
(6)			

This form should be used by staff to record group meetings of Corpswomen or Corpswomen and Staff that are your responsibility.

Ongoing Groups such as:

1. **Group Counseling sessions - Floor Meetings**
2. **Student Council, Recreation Council and Committees**
3. **Center Service Aide Groups**
4. **Class groups outside of training time**
5. **Special groups organized by you for discussions, activity or other purposes.**

***SUMMARY:** **Include a brief description of topics, concerns, problems discussed. Include special activities such as election of officers, etc. A list of officers and changes in officers must be noted, so that the information may be transmitted to the Corpswoman's file. Information will be used in the evaluation of the Resident, Non-Resident Program to compare the participation and differences in concerns.**

To give us accurate attendance records for monthly reports to Washington and for each Corpswoman's record of participation to give us an idea of the current and general concerns of Corpswomen.

Item B-11

VOCATIONAL RECORD

Corpswoman ______________ SSN _____ Arrival Date _____________

Birth Date ___ Last Grade Completed __ U.S. Citizen: Yes __ No __

Parent or Guardian's Name ________________ Phone: ______________

Home Address ____

Marital Status ___________ Place of Recruitment _______________

Screener (Agency & Address) ____________________________________

Work Experience Prior to Job Corps -- Duration and Wages:

Entry Test Scores (Stanford Achievement):

Word Mng __ Para Mng __ Lang. __ Spelling __ Math Comp. __ Math Concept __ Math Appl. __

Vocational Specialist _____ Date of Initial Voc. Interview _______

Vocational Training Programs:

1. Program ____________________ Location ______________________
   Hours & Days of Training ____
   Entry Date ____ Last Date of Training ___ Hrs. Completed ___
   Reason for Withdrawal ____
2. Program ____________________ Location ______________________
   Hours and Days of Training ______________________________________
   Entry Date ____ Last Date of Training ___ Hrs. Completed ___
   Reason for Withdrawal ____
3. Program ____________________ Location ______________________
   Hours & Days of Training ____
   Entry Date ____ Last Date of Training ___ Hrs. Completed ___
   Reason for Withdrawal ____
4. Program ____________________ Location ______________________
   Hours & Days of Training ____
   Entry Date ____ Last Date of Training ___ Hrs. Completed ___
   Reason for Withdrawal ____

Record of Interviews with Corpswoman (Includes Vocational Exploration):

Temporary Work Assignments (Work-Task, Work Experience, etc.)

1. Place ______________________________
   Length of Assignment ___ Date Started ___ Date Terminated ____
   Purpose ______________________________
   Evaluation by Trainer ______________________________
2. Place ______________________________
   Length of Assignment ___ Date Started ___ Date Terminated ____
   Purpose ______________________________
   Evaluation by Trainer ______________________________

Graduation Record

Departure Date ___ Parental Consent: Yes ___ No ___ Eligible for Readmission: Yes ___ No ___

Category 1 ____ Employable as a ______________________________

Category 2 ____ Category 3 ____ Terminated as a ____________________

Vocational Specialist's Evaluation of Corpswomen:

Employment Record

Job Title ____________________ Start Date ______ Wages __________

Employer Name & Address: ______________________________

Placed by: ______________________________

Item B-12

EXIT INTERVIEW

Introduction

Hello, my name is ______________________ . Now that you are leaving we want to talk to you about some of your plans and your feelings about Job Corps. We would like to know what you really think.

1. Do you have an address where you can be reached for the next few months?

   (IF YES) What is it? (HOUSE NUMBER, STREET, CITY, AND STATE)

   Whose name is the phone listed in?

   In case you move, we would like to get the names of some relatives or friends who usually know where you are.

2. Which of your relatives (other than husband) are you usually in touch with; that is, who do you talk with or visit more than once a month?

   During most of the time before you were 14, did you live with both your father and mother?

   (IF NO)

   Who did you live with most of the time?

3. Which of your friends outside of Job Corps do you talk with or visit regularly; that is, more than once a month? Do you know their address and phone number?

4. Why are you leaving Job Corps?

   (IF OTHER THAN GRADUATE)

   What would have to be different for you to have stayed?

(ASK 5 & 6 OF RESIDENT CORPSWOMEN ONLY)

5. How do you feel about living in the Center?

6. How do you feel about the other Corpswomen?

(ASK 7 & 8 OF NON-RESIDENT CORPSWOMEN ONLY)

7. How do do you feel about commuting to the Center every day?

   Why do you think that?

8. How do you feel about the other Corpswomen?

(ASK ALL CORPSWOMEN)

9. Who in the Center, not necessarily staff, did you find it easiest to talk with? (GET NAMES IF POSSIBLE)

   9a. Why was it easy to talk with ________________ ?

   9b. Generally what kinds of things did you usually talk to ______________ about?

   (REPEAT 9a AND 9b FOR EACH NAME)

10. When you felt like you needed to talk to someone, was someone who worked here available?

    (IF NO OR DON'T KNOW)

    Why do you say that?

11. Try to remember how you felt when you first came to Job Corps. Do you think you changed any since you've been here?

    (IF YES)

    In what way?

    Have you changed your appearance since you first came to Job Corps?

    (IF YES)

    How have you changed?

    Do you think of yourself in the same way?

    (IF NO)

    How have you changed?

    Has the way you get along with people changed?

    (IF YES)

    How has it changed?

    Has there been any change in the way you accept help from others?

    (IF YES)

    How has it changed?

    Do you see your future in the same way?

    (IF NO)

    How has it changed?

Has there been any change in the way you feel about working?

(IF YES)

How has it changed?

12. Which activities other than classes did you participate in?

    Which ones did you like?

    Which ones did you dislike?

13. Do you consider the money you received a salary, an allowance, a stipend, welfare, or other?

14. Did you have enough money to get along on?

15. How did you use your money?

16. Were there any times when it was very hard for you to remain in Job Corps?

    (IF YES)

    When?

    Why?

17. Have you taken a job after you leave Job Corps?

    (IF NO OR DON'T KNOW, SKIP TO QUESTION #19)

    (IF YES) Where will you be working?

    Supervisor

    Address

    Company

    How many hours a week will you be working?

    What will your salary be?

    What will you be doing?

18. Why did you decide to take this job?

(ASK ALL)

19. How many jobs have you applied for?

    (IF NONE, ASK 19a & 19b, THEN SKIP TO QUESTION #23)

    19a. Why haven't you applied?

    19b. What do you plan to do?

(FOR THOSE WHO HAVE APPLIED FOR JOBS)

20. How many jobs did you hear about?

    How did you hear about those jobs?

21. How many of these jobs did you turn down?

    Why did you turn them down?

22. Were you turned down for any of them?

    (IF YES)

    Why do you think you were turned down?

23. Do you think the training you received in Job Corps will help you on your job?

    (ASK ALL)

    Why do you think that?

    (ASK ALL)

    What do you think the skills training has done for you?

    What do you think Basic Education Training has done for you?

    What do you think recreation has done for you?

24. Is there anything else about your experience in Job Corps that you think will be of any help to you?

    Why do you think that?

25. If you could change anything you wanted to about Job Corps, what would you change and how would you change it?

26. What is the one think in Job Corps you would not want to see changed and why?

27. What do you think you'll be doing 3 years from now?

28. Why do you think you'll be doing that? (PROBE FOR PLANS)

29. Is this what you would really like to be doing?

    (IF NO)

    What would you really like to be doing?

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POVERTY
evaluation design for Los Angeles Women's
Job Corps Center

EMPLOYMENT
same

LOS ANGELES
same

EVALUATION METHODS
same

3
OEO
Econ/MSD/SySci